

THE WIFE AND MOTHER:

A Medical Guide

TO THE CARE OF HER HEALTH AND THE
MANAGEMENT OF HER CHILDREN.

BY

ALBERT WESTLAND, M.A., M.D., C.M.

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PREFACE TO FOURTH EDITION.

THE work has been revised for the present edition and altered where necessary. The latest modification in the law as to Vaccination is given in the Appendix.

Jan. 1902.

PREFACE TO THIRD EDITION.

IN revising this work preparatory to the issue of a Third Edition, the author has not found it necessary to alter much of what he wrote now more than seven years since. At that time he had in view to impart as lucidly as possible well-established facts, which would be useful to wives and mothers careful of their own and their children's health, more especially when placed in circumstances where medical advice was not immediately available; and to abstain as far as possible from entering into questions upon which diverse views might exist, or suggesting treatment not generally accepted by the medical profession. During the period which has elapsed since the First Edition was printed, some advances have been made in the artificial feeding of young children; and, so far as is useful, these have been incorporated. The relation of nasal obstruction, whether resulting from adenoid growths or other causes, to deafness in children, has come into prominence, and is referred to at some length. Additional experience in general practice has modified occasionally his views of treatment; but in all important respects the work remains the same as when first published.

LONDON,

November 1898.

PREFACE.

THIS work is addressed to women who are desirous of fulfilling properly their duties as wives and mothers, and is designed to assist them in exercising an intelligent supervision over their own and their children's health. The information contained in it is the common property of every well-educated physician; any difficulty which has presented itself in its composition has arisen in the selection of the contents, and their mode of treatment. In these respects the author has been guided by his experience in general medical practice, his object having been to convey as much information as an intelligent woman might be expected to appreciate and utilize.

In the chapter on Common Maladies of Children, systematic description of diseases has been avoided, the intention of the author being rather to give such general information of their character and course as would assist in their recognition, and afford some guide to their management.

LONDON,

April, 1892.

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THE WIFE AND MOTHER.

PART I.

Early Married Life.

CHAPTER I.

DUTIES AND RESPONSIBILITIES OF MARRIED LIFE.

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—IMPORTANCE OF STEP TAKEN IN ENTERING MATRIMONY—NECESSITY
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OF LIFE DURING WHICH MATERNITY MAY OCCUR—POSSIBILITY OF SOME
SUFFERING DURING THIS PERIOD—EFFECT OF MOTHER'S LIFE AND
CONDUCT ON FUTURE HEALTH OF CHILD—INHERITED TENDENCIES—
LESSONS FROM EXAMPLES—IMITATIVE FACULTIES OF CHILDREN.

Every young woman who enters into what are conventionally called the "bonds of matrimony" voluntarily accepts certain responsibilities, and undertakes certain duties, not only important in themselves, but noteworthy also in this, that their neglect and repudiation may be followed by far-reaching consequences to others. Convention has decreed that those duties and responsibilities should be discovered mainly by wives after marriage; and it is seldom indeed that mothers are judicious or enlightened enough to place before their marriageable daughters even a partial view of the difficulties and troubles which almost every married woman will have to face at some period of her married life. Not that one would wish such difficulties to be represented as a deterrent from entering a life which to every woman should form the ideal of happiness; but it is certainly desirable that women

on entering married life should be aware that calls will be made upon their courage, their temper, and their forbearance; and should take what is undoubtedly the most decisive step of their lives with some knowledge of its importance and gravity, and some sense of the great influence which marriage must exercise on all their future career. Whatever view one may take of the relative position of the sexes in married life, it is obvious that both husband and wife must, to some extent, lose the independence of the unmarried state. The law of England, as of most other civilised nations, makes the marriage union indissoluble except by death or misconduct; and married people must enter their common life with the full intention of remaining in close association for the term of their natural lives. If this association is to be a happy and prosperous one, if their joint life is to be fuller and richer after marriage than before, it is absolutely essential that each must contribute to the result by careful consideration of the other's feelings and wishes, and by occasional sacrifice of his or her own inclination and desires. No two human beings ever were born, or probably ever will be, with exactly the same tastes, wishes, desires, and appetites, just as no two persons ever presented exactly the same type of features and expression. And if two agree to lead the same life as united in marriage, that life must naturally be to some extent a compromise of their relative inclinations and ideals. One of the first duties, then, of married life is to learn to subordinate personal wishes to mutual interests.

In the marriage ceremony of the Church of England, it is stated that one of the objects for which marriage is instituted is the begetting of children; and to most, if not all, right-minded women, the pleasures of maternity are looked forward to as the highest blessing of married life. There is inborn in a woman's mind the love of children, and the wish to have children of her own, on whom maternal love can be lavished; and as regards the vast majority of married women, this instinct and wish are fulfilled. For the larger part of a woman's life, the power of reproducing is possessed while in health, and not unfrequently even when health is much impaired; and during the whole period of life from fourteen to fifty-four the possibility of bearing children exists, although examples at either of these extreme ages are very rare. In England, where early marriage is not the rule, it is unusual to find mothers at an earlier age than eighteen, while it is almost equally exceptional for women to have children after forty-six years of age.

Great, however, as is the pleasure and the comfort of possessing children, and valuable as is the solace of their love and affection,

their possession is not usually attained without some suffering and self-sacrifice on the part of the mother. From the very commencement of pregnancy, it is necessary for the future mother to pay some attention to the results which her life and conduct may have on the welfare of the child she is about to bring into existence. Irresistible evidence is plentiful that both the physical and mental health of children depend greatly upon the characteristics which they inherit from their parents, and perhaps more especially from their mothers. To mention only very well-marked inherited tendencies, it is a matter of daily observation that undue indulgence in alcoholic beverages shows its effects in children—not only in a craving for alcohol, but also in various diseases of the nervous system, such as epilepsy and hysteria, and even idiocy.

No diseases are more readily transmitted to children than those of the nervous system ; and want of control in the mother, resulting in fits of passion and hysterical attacks, may not unfrequently manifest themselves in children in the more marked forms of epilepsy and insanity. So that the duty of all thoughtful persons likely to become mothers is indicated most plainly. Careful regulation of daily life, abstinence from excesses of any kind, and, as far as possible, the avoidance of severe strains upon the nervous system, are of the greatest possible importance in view of the object most desired by a right-minded wife—the bearing of a healthy infant.

But not only by these more obvious and prominent departures from healthy life is the future of a child imperilled. There can be little doubt that even slighter ailments which may be acquired by the mother are sometimes transmitted to the child. It is not uncommon to remark in children a tendency to indigestion and irritation of the stomach, which may be traced to the presence of dyspepsia in the mother, induced by improper diet and undue indulgence in indigestible foods. One of the most fatal inheritances of children in this country is the tendency to rheumatism, which often leads in early life to inflammatory diseases of the heart, as well as to painful affections of the joints. Illnesses of this character in childhood frequently produce results of which the injurious effects are apparent throughout the whole duration of life. And even such apparently unimportant defects as slight imperfections of the eyes, showing themselves in short-sightedness or long-sightedness, seem capable of being transmitted to one's offspring. It seems probable, indeed, that minor mental imperfections—such as irritability, and angry passion, and deceit—may be transmitted in a similar manner, although the proof is more difficult ; and the probability is strengthened by consideration of the frequency

with which tricks of manner, and peculiarities of expression, are repeated in children even where the possibility of imitation has been excluded by separation.

Thoughtful consideration of these facts will impress upon every married woman the responsibility which rests upon her to regulate her conduct and life in such a way that her offspring may not suffer in any manner from her indiscretion or carelessness. To any one possessing a sense of right feeling, it would be a matter of life-long regret that a child has suffered from any cause which a little care exercised at the proper time might have entirely prevented; and the remorse would be intensified by the consideration that inherited taints of the character indicated do not necessarily limit themselves to one generation, but may not unfrequently be traced through three or four successive families.

The position of responsibility, moreover, does not end with the birth of the child. Although there is room for doubt whether any mental characteristics are actually absorbed, in the popular phrase, "with the mother's milk," there can be no doubt that, from a very early stage in its career, every child possesses more or less an imitative power, and will acquire from its mother habits of speech and conduct very much sooner than is usually supposed. Outbursts of petulant anger, the use of improper language, or unseemly levity of conduct, will often produce on the young mind impressions which may react to its disadvantage and injury in later years; while, on the other hand, dignified control of temper and gentle manners will be imitated in early childhood, and impress permanently the character in after life.

Many considerations of a similar nature might be adduced to illustrate the influence which maternal characteristics may have upon children; but enough has been said to impress upon all expectant mothers the propriety and desirability of conscientiously regulating their conduct during pregnancy and in motherhood, so that right impulses and healthy energies should spread outward in an increasing wave through successive generations.

It is related in the life of the Rev. Charles Kingsley, that when his mother became aware that she was about to bear a child, she firmly resolved that during her pregnancy she would allow no external troubles to influence her mind, and that, living in a beautiful country, she would give up as much time as possible to the contemplation of natural beauty, and to admiration of the works of the Almighty; and it is easy to believe that the thorough sympathy with nature, and the earnest humanity which characterised the author of *The Water Babies* and *Yeast*, were due in great measure to the mental attitude of his mother during

the months preceding his birth. Every mother cannot carry out these principles to the same extent; but it is possible for every expectant mother to look, as far as may be, rather to the future happiness of motherhood than to the present discomforts of pregnancy; to feel that in becoming a mother she is fulfilling a duty high and important; and to the best of her ability to contemplate the brighter side of the picture, encouraged by the constantly nearing approach of maternal joy.

CHAPTER II.

ALTERED CONDITIONS OF LIFE AFTER MARRIAGE.

CHANGE IN THE CIRCUMSTANCES OF THE WIFE—LOSS OF FAMILY TIES—FORMATION OF NEW FRIENDSHIPS—UTILIZATION OF LEISURE HOURS—IMPORTANCE OF OUT-DOOR EXERCISE—VARIOUS FORMS OF EXERCISE—VALUE OF MOTIVE IN WALKING—CARE IN DIET—DUTY OF TAKING PROPER CARE OF HEALTH—PLACE OF ALCOHOLIC STIMULANTS IN DIET—INJURIOUS EFFECTS OF IMPROPER USE OF STIMULANTS ON MOTHER AND CHILD—MENTAL OCCUPATION—TENDENCY TO OCCASIONAL DEPRESSION—METHODS OF RELIEF—DOMESTIC TROUBLES—RULE FOR AVOIDING WORRY.

Marriage is followed by a very much greater change in the circumstances and habits of the wife than in those of the husband. The latter still pursues the daily occupation to which he has been accustomed for years, one-third at least of his time probably being devoted to the claims of his profession or business; and, in general, he is still surrounded by his old friends, and to some extent is able to participate in his usual recreations. On the other hand, the wife will most commonly find herself in a completely novel position. Her family ties are more completely broken, and the occupations of girlhood are exchanged for the more responsible duties of housekeeping; while she will often find herself separated by distance from old friends, and under the necessity of creating a new circle of friends and acquaintances in her more immediate neighbourhood. It is impossible that such a change can be suddenly effected without more or less discomfort and annoyance.

To many women, even when young, the making of new friendships is a difficult and slow process; and the difficulty is one which generally increases with progressing years. Yet, to most young married women, *the companionship of at least a few friends is*

very desirable, if not absolutely necessary, for the maintenance of health. The general conditions of social life in England render it a necessary misfortune, for all but the very wealthy, that the husband should be absent from home for many hours daily in the pursuit of his business; and even with the occupation and excitement to which early adventures in housekeeping may give rise, there must often be many lonely and occasionally weary hours for the wives who are left at home. It is a duty which a wife owes to her husband as well as to her health to make every effort to use well these solitary hours.

A very common failing, especially among those whose life is spent in large towns, is the tendency to lead too sedentary a life, and to neglect the *regular outdoor exercise* which is indispensable to good health. No fact in physiology is more clearly proved than the necessity of physical exercise of some kind, if health is to be maintained in a satisfactory condition. The form that the exercise may take is of minor importance. To those who can afford it, riding on horseback is a very agreeable and most valuable form; and cycling is a recreation within the reach of many who cannot afford the luxury of a living steed. The introduction of the safety bicycle has placed within the reach of people of even limited means a method of locomotion at once pleasant and useful, allowing of distances being covered with little exertion which are quite unattainable by walking. Indulged in judiciously and in moderation, cycling is a perfectly safe exercise for any woman in good health. To those who live in the neighbourhood of rivers or at the seaside, rowing, and more especially sculling, is an equally delightful and useful mode of exercise, and one very well suited to young women who are sensible enough to wear a dress suitable for the purpose.

The majority of young married women will, however, probably have to content themselves with walking exercise. It is frequently asked how much walking exercise should be undertaken daily; and the question is one to which it is impossible to give a definite answer. Much depends upon the temperament, the strength, and the nervous energy of the inquirer, as well as upon the circumstances under which the exercise is taken. It is a matter of daily observation that one can walk much farther with less fatigue if one has an interesting companion, or a special object in view. It may be said generally that most women would be the better of walking at least three or four miles daily, while many are quite able to enjoy thoroughly and benefit by a walk of six or eight miles. If no special motive for walking exists, it is often well to invent one. Dealing with shops at some distance from one's home sometimes offers an inducement for exercise; or visiting friends at

some distance from one's residence may be a convenient motive. The main point is to avoid what is sometimes called "taking a constitutional," a proceeding which is very unlikely to have the desired effect in promoting health.

In addition to regularity of exercise, **regularity of diet** is of prime importance to the maintenance of good health in early married life. It is, however, a duty which is rather apt to be neglected. Women are sometimes inclined to think that there is a certain amount of selfishness in considering their own wants in the absence of their husbands; and instead of taking regular and proper meals, to temporise with some substitute, such as tea, which, while it stimulates and removes temporarily the sense of fatigue and hunger, really affords nothing that can properly be termed food. There is no real selfishness in supplying one's wants in such a way as to maintain oneself in good health; and it is a duty women owe to their husbands to regulate their lives so as to be fit companions for them, and healthy mothers for their children. To women who breakfast early, and whose evening meal is late, it is most essential to have a proper substantial meal in the middle of the day, of which a part should consist of some kind of meat or fish.

Effect of Stimulants.—Young women should especially be careful to avoid acquiring the habit of taking any alcoholic fluids to supply the place of more valuable food. The proper place of alcoholic stimulants, so far as they may be required or taken at all, is as an adjuvant to the more solid meals of the day; and, even then, they should only be taken in very moderate quantity. Probably the majority of women will enjoy better health while abstaining from all alcoholic drinks; but even in cases where the digestion is assisted and health improved by a little wine or beer taken with meals, an invariable rule should be adopted that no stimulants be taken at any other time without direct medical sanction or recommendation. Irregular stimulant-drinking is not only directly injurious in many ways, but also the indirect cause of many maladies, more especially of the nervous system, and is exceedingly apt to lead to permanent habits of inebriety. Considerable experience has shown that this practice is one of the most fertile causes of unhappy married life; while conclusive evidence proves its injurious effect upon the health of the offspring.

Health of the Mind.—While due attention is given to the material requirements of the body, another equally important condition of health is *the maintenance of the mind in properly regulated employment*. Real health is only obtainable when both the mind and the body are kept in satisfactory condition by active

exercise. It is no uncommon thing for young women after marriage to give up the occupations of the leisure which they enjoyed before other interests occupied their attention; and when the novelty of the altered life has somewhat faded, it is not unfrequent to observe mental depression, and occasional tendency to hysteria, as the result of a sense of loneliness and absence of interesting intellectual resource. Commencing in this way, the depression may and often does lead eventually to indigestion, and sleeplessness, and manifests itself externally in irritability and unhappiness. It is very desirable that young married women should have at least one mental resource upon which they can fall back when irritated by the troubles of housekeeping, or when suffering from the ennui resulting from separation from old friends. Whether that resource be music, reading, singing, drawing, or any other so-called accomplishment, it should be cultivated with assiduity and regularity; for of all these it may be said that the pleasure derived from them increases with practice and use, and decreases with neglect. Both in earlier and later life, we shall reap the reward of some self-sacrifice in the practice of pursuits which both afford pleasure and extend and cultivate our mental resources.

Minor Troubles of Life.—Every young woman who commences housekeeping on even a very moderate scale must expect to encounter a certain number of troubles and worries. She has, in many cases, to enter into relations with others in a sphere rather different from her own, and it is impossible that without experience she can realize and understand their point of view, just as it is very unlikely that they will understand or appreciate hers. It is most necessary for her peace of mind that she should perceive that there are usually at least two points of view from which things can be regarded; and that her own is not necessarily the right, still less the only one. And while, naturally, we all prefer our own view, it is very foolish to be annoyed because other people prefer theirs. A golden rule which will often save us from petty worries is—to strive resolutely to allow only our own conduct to affect our mental condition; to rest satisfied with doing our very best; and having done this, to disregard as far as possible the failure of others to attain our own particular standard. It has been remarked that there are two classes of circumstances in life which should never be allowed to annoy us: those circumstances that *can* be helped, and those that *cannot*; the former, being under our own control, may be obviated, and the latter, being beyond our control, should be disregarded. Oliver Wendell Holmes, in one of his works, remarks that the human race might be divided into the “*Ifs*” and the “*Ases*,” the

"*Ifs*" being those who desire unattainable conditions for their happiness, and the "*Ases*" those who accept facts as they are and make the best of them. Every young woman who wishes to make the best of her life should resolve to place herself at once in the latter class.

CHAPTER III.

SIGNS AND SYMPTOMS OF PREGNANCY.

THEIR EXISTENCE AND IMPORT—PLAN OF CONSIDERATION—CESSATION OF MENSTRUATION—ITS SIGNIFICANCE AND VALUE IN DETERMINING PROBABLE DURATION OF PREGNANCY—NORMAL DURATION OF PREGNANCY—EXTREME LIMITS OF DURATION—METHODS OF DETERMINING PROBABLE DATE OF CONFINEMENT—EXAMPLES. GASTRIC DERANGEMENTS—MORNING SICKNESS—ABNORMAL SENSE OF HUNGER—CRAVING FOR UNUSUAL ARTICLES OF DIET—PAIN IN STOMACH—OTHER DISORDERS OF DIGESTION—ENLARGEMENT OF BREASTS—TENDERNESS—PROMINENCE OF VEINS—SECRETION OF MILK—ENLARGEMENT AND PIGMENTATION OF AREOLA—SECONDARY AREOLA—QUICKENING AND SENSATIONS OF MOVEMENT OF CHILD—POSSIBILITY OF MISTAKE IN SENSATIONS—EXTERNAL EVIDENCE OF MOVEMENT—INCREASE IN SIZE OF ABDOMEN—PERIOD AT WHICH NOTICEABLE—CONCLUSION.

The commencement and progress of pregnancy are usually characterised by certain *external and objective signs*, and certain *internal and subjective symptoms*, which in general are sufficiently pronounced to inform the expectant mother with fair certainty both of the condition she is in, and of the probable period of its eventuation. Of these signs and symptoms some are only occasionally present, but when present are of much value; others are always present, although their meaning may occasionally be misinterpreted; while others again, though frequently present, are not of material importance in determining the existence of pregnancy, as they often accompany other conditions not related to pregnancy. Some of the signs also can only be appreciated by a duly qualified medical man; no mention will be made of such indications in the descriptions which follow. In regard to those which are described, their value as symptoms, and the frequency with which they occur, will as far as possible be pointed out, together with the bearing of each on the question as to the period of gestation which may have been reached, and the consequent determination of the date at which confinement may be anticipated. The consideration of the

duration of ordinary pregnancy will be better entered upon after the first symptom has been described and explained.

Cessation of Menstruation.—As a general rule, the existence of pregnancy is first suggested by the cessation of the usual monthly period. While in different women the period of time between the so-called “monthly” periods may vary from less than three to more than five weeks, in the same individual the intervals are usually fairly uniform; and although it is not very uncommon in early married life to notice a slight deviation from this regularity, a postponement of the monthly period for more than two weeks beyond the ordinary interval always suggests at least the possibility of pregnancy, while if entire cessation results, in the absence of any other apparent cause, the probability of pregnancy is exceedingly strong. In not a few cases, what is at first observed is not absolute cessation of the period, but a diminished menstrual flow for a shorter time than usual; and only on the following occasion when the period is expected is the menstrual flow entirely arrested.

The value of this sign is considerable. Arrest of the menstrual flow, in the absence of illness, and when no chill followed by pain has been experienced, is very exceptional in healthy young women; so that when the arrest occurs, unaccompanied by any symptoms of disordered health, there is a strong presumption that it is to be referred to the existence of pregnancy. Its significance when present is not diminished by the fact that a comparatively small number of women continue to have their menstrual period during the first three or four months of pregnancy—in some cases certainly rather diminished in amount; while a very few have a periodic coloured discharge through the whole duration of gestation. Such instances, however, are relatively very uncommon. The fact that menstruation *usually* ceases from the commencement of pregnancy, is of great value in enabling one to determine the time at which confinement is likely to take place.

Duration of Pregnancy.—The ordinary duration of pregnancy is usually presumed to be from 273 to 280 days, that is, about nine calendar months, or ten lunar months of 28 days each. There is some evidence to show that confinement frequently takes place about what would be the tenth menstrual period after the last period before the cessation of the menstrual flow, so that women who menstruate rather more frequently than every 28 days would probably have a shorter period of gestation than those who have longer intervals between the monthly periods. Gestation, however, for a much shorter time than nine calendar months is exceptional; and if the duration is more than two weeks short of

that period, the baby will generally show some indications of premature birth. On the other hand, the duration of pregnancy beyond 280 days is not at all uncommon ; not very unfrequently gestation is prolonged beyond 300 days, and even in some cases as long as 45 or 46 weeks. Such instances are, however, undoubtedly rare ; and in the large majority of cases, pregnancy is terminated by mature confinement at the end of about 40 weeks.

For the purpose of determining as accurately as possible *the probable date of confinement*, it is usual to assume that the commencement of pregnancy dates from about one week after the last observed menstrual period, the beginning of pregnancy being most likely to occur at that time ; and to estimate that confinement will take place not earlier than nine calendar months from that date. Thus, if the last menstrual period ceased on the 1st of January, one would allow one week from that day, and calculate that confinement would occur not earlier than the 8th of October. It is generally believed also that, next to one week after the menstrual period, pregnancy most commonly commences immediately before the menstrual period ; and allowing nine months from that date, the calculation would be made that confinement would not be later than nine calendar months and three weeks from the cessation of the last observed menstrual period. Utilizing the example given above, and assuming that an individual menstruated every 28 days, if the last menstruation terminated on January 1st, the next would have been expected on January 29th ; and on the assumption that pregnancy may have commenced two days before that date, it would be concluded that the pregnancy might not be determined by confinement before the 27th of October. Since however, the pregnancy may begin at any time between the menstrual periods, the date of confinement would lie approximately between the 8th and 27th of October, with the possibility of occurring even one week earlier ; and in most cases this approximation of dates is the greatest degree of certainty which can be reached, at least when it is a first pregnancy that is in question. In later pregnancies, a greater degree of certainty can frequently be attained, from the fact that successive pregnancies are apt to follow the same course as to duration and period of commencement. In regard to the probability of the later or earlier date being the true one, there seems some evidence to show that where there has been a slight and exceptionally small menstrual period last observed, the pregnancy may date from immediately before it ; whereas, when the last observed period has been one of usual character, the probability will be that pregnancy commenced within

a week after it. In other words, when pregnancy commences immediately before a menstrual period, the period is not always entirely prevented, but is diminished in duration and amount. This, however, is not by any means invariable; and it is generally safer, in making arrangements for a confinement, to assume that it may occur on any day after the date calculated from the week succeeding the last ordinary menstrual period.

In the exceptional instances where menstruation is not arrested during pregnancy, the difficulty of estimating the probable date of confinement is considerably increased, and an equal degree of accuracy is not usually obtainable; although considerable assistance in the calculation is not unfrequently derived from the symptoms we are next to consider, as well as from others to be described further on.

Gastric Derangements of Pregnancy.—Very few women go through the whole course of a first pregnancy without some disturbances of health referable to the stomach and other organs of digestion; and in later pregnancies also affections of this character are of very frequent occurrence. The more usual gastric derangements are, morning sickness, abnormal hunger, cravings for unwonted articles of diet, and pain in the stomach.

1. Morning Sickness.—The most common form observed is that of a feeling of sickness on rising from bed in the morning, resulting in a few minutes in some amount of retching. With some the sensation only lasts for two or three minutes in all, and may pass off without any retching or vomiting; with others the sense of sickness may be not only severe, but accompanied by retching and vomiting of watery mucus for a period extending from fifteen minutes to half an hour. Generally speaking, this symptom, if it occurs at all, occurs at a very early stage of pregnancy, not unfrequently showing itself even in the first week, so that it may precede in date of appearance the cessation of menstruation described in the previous section. When it has once commenced, it is apt to recur every day under similar circumstances for some little time, often lasting during the whole of the first three months of pregnancy; in some few cases it continues, with perhaps occasional remissions, during the whole pregnancy, but these are exceptional. The intensity and duration of the retching will usually vary from day to day, and a day or two may elapse when no sickness is present; but even then a slight sense of nausea is usually experienced for a little time.

As an early symptom of pregnancy, this indication is very valuable, for the character of the retching is different from anything that occurs in ordinary health. Sickness of a similar kind

is common in some severe affections of the stomach, and in persons prone to alcoholic excess ; but the peculiar combination of morning sickness without any other apparent affection of the stomach, and with good health enjoyed during the rest of the day, is strongly indicative of pregnancy. As an indication of the probable period of confinement, the fact of its usual commencement within six weeks of the beginning of pregnancy affords approximate evidence ; while in the instances in which it is experienced before the cessation of the menstrual period, the dates of the commencement of pregnancy and the probable time of confinement can usually be fixed within one or two weeks. In some cases, where morning sickness has commenced within one week after a normal menstrual period, the beginning of the pregnancy can be certainly estimated within two or three days' range.

2. Abnormal Sense of Hunger and Craving for Food is another form of disorder of digestion somewhat characteristic of pregnancy. This sensation, which may be present contemporaneously with morning sickness, or may exist in the absence of the latter symptom, is generally observed in the form of sudden accesses of hunger at irregular periods throughout the day, and occasionally also during the night, temporarily relieved by partaking of a small quantity of food. The hunger is exceptional in its characteristics—viz., frequent recurrence, and relief by a smaller quantity of food than would ordinarily satisfy a hungry person. In not a few cases, indeed, the sensation of hunger is succeeded on commencing to eat by an early sense of repletion, and sometimes even by actual nausea. Sometimes the sensation is described as a feeling of faintness rather than hunger ; in that form also it is generally temporarily relieved by taking food.

3. Cravings for Unwonted Articles of Food.—A third form of disordered digestion is seen in cravings for unusual and often unwholesome articles of diet. Women who have been accustomed to plain and regular diet occasionally have longings for articles of food which they have not been in the habit of indulging in, and which they have even formerly disliked. More especially is observed a frequent craving for rather highly flavoured articles of diet, such as rich ripe cheese, pickles, smoked fish, &c.

4. Pain in the Stomach is an unfrequent symptom, and, when it is observed in the absence of sickness, usually takes the form of acute pain immediately following the taking of food. It is sometimes of a very acute character, resembling neuralgia, and can be relieved by the artificial induction of vomiting.

The second and third forms of gastric disturbance just described are of considerable value in determining the existence of pregnancy,

as they do not usually characterise or accompany ordinary types of indigestion, or more serious maladies of the stomach. With regard to the period of pregnancy attained, they do not give any very valuable information, as they are not uncommonly found at any time during the whole nine months of pregnancy ; but, considered in connection with other signs and symptoms present, they occasionally give some assistance in determining the probable date of confinement. The fourth form mentioned (pain in the stomach) is not reliable as a symptom, since it not unfrequently accompanies different diseases of the stomach, and has no exceptional character when present in cases of pregnancy. Other disorders of digestion, such as discomfort, sense of fulness, heartburn, and vomiting at other times than on rising in the morning, are not of sufficient significance to be dealt with as symptoms of pregnancy, and will be mentioned more suitably in a future chapter (on the discomforts of pregnancy and their treatment). In closing this section, however, it may be added that marked sensations of sickness, and, still more, attacks of retching and vomiting occurring irregularly at any period of the day, and without any relation to the hours of taking food, always suggest the possibility of pregnancy, in the absence of any illness which might otherwise account for them.

Enlargement of Breasts.—In most young women, either a few days before, or else during the menstrual period, the breasts become somewhat fuller and larger ; and this temporary increase of size is often attended with some degree of tenderness. It is generally found that, shortly after the commencement of pregnancy, this enlargement and fulness not only remain permanently, but even tend gradually to increase ; while any tenderness which may have formerly been associated with the fulness usually disappears. The fulness is further accompanied and characterised by a feeling of greater firmness, and a sense of increased resistance on gentle pressure. Often also there is an apparent increase in size of the blue veins which are seen under the skin covering the breast, and veins which were not apparent before become markedly prominent on the surface, both of the breasts themselves, and of the bust in the vicinity of the breasts. The nipples also sometimes become rather larger and more prominent, and occasionally in some cases discharge a little watery fluid or even milk. The symptom is sometimes accompanied by shooting pains, and sometimes by throbbing in the breasts ; but much pain or discomfort of this kind is rare. As a sign of pregnancy it occurs early, the enlargement being often noticeable from the first month, and its presence will strengthen considerably the evidence afforded by any other symptoms which may be present. The time at which

it occurs, however, is not sufficiently uniform for it to be of value as an indication of the date of the pregnancy. A sign closely allied to this now to be described affords more valuable information.

Enlargement and Pigmentation of Areola of Breasts.—The colour of the skin in a circular area of varying size round the nipples differs from that of the rest of the breast. This exceptionally-coloured circle, which varies in diameter in different women—in some measuring only about one inch from side to side, in others about two inches—is known as the *areola* of the breast. In fair women the colour is usually a very light pink, while in those of darker complexion it may vary from a bright red to a pale brown colour, being usually darkest in women with black hair. Occasionally, small projecting prominences about the size of the head of a pin are observable here and there within the areola; these are the orifices of glands of the skin.

In the course of pregnancy this areola very generally becomes both larger in circumference and deeper in colour. Both these results are more conspicuous in women of dark complexion, the colour of the areola being already more defined before the commencement of pregnancy; but the increase in size is often very noticeable even in women of markedly fair complexion. The alteration is accompanied frequently by some enlargement and increased prominence of the glands of the skin referred to above. The enlargement of the areola and the deepened colour can often be distinguished by the end of the second month of pregnancy; and after three months have elapsed from the commencement, they are, except in a few fair women, very distinct. As a sign of existing pregnancy, the areola is only of moderate importance, as similar conditions are observed occasionally in connection with some forms of disease; but when it occurs in good health, and in combination with other signs described, its presence materially strengthens the certainty. Conclusions of fair accuracy also may be arrived at from this sign of the stage of pregnancy reached, if it is considered along with the sign about to be described.

Secondary Areola of the Breast.—Between four and five months after pregnancy commences, in most women who are not exceptionally fair in complexion, a slightly discoloured ring develops just outside the areola. It is of paler colour than the areola, shading it off, as it were, into the normally coloured skin of the breast; and varies in breadth from half an inch to an inch and a half or more. Its most characteristic peculiarity is, that the coloration is not uniform as in the areola, but mottled—just as if drops of water had fallen here and there on the surface, and

partially washed off the colour. The appearance is somewhat striking, and is peculiar to pregnancy ; so that, when well marked, it may be accepted as a certain indication ; and the period of pregnancy at which it appears is fairly uniform. All the three signs described above relating to the breasts remain after development until the termination by delivery, and the increased colour frequently remains long afterwards. Often, indeed, the colour of the areola never in after life regains its original paleness and softness.

Quickening, and other Sensations of Movement of the Child.

—By the term “quickening” is meant the first perception by the mother of the movement of the infant in her womb. From a very early period of its existence in the womb, the child possesses some power of movement ; but during the first one or two months of pregnancy the movements are so feeble and slight as to be imperceptible to the mother. The movements apparently consist at first chiefly of motions of the legs in straightening and bending them ; and are performed so quickly as to have the character of kicking. As the growth of the child progresses, there are movements of the arms also, and rolling or tumbling about of the whole body within the fluid in which it is immersed in the interior of the womb. With many women the first experience of this movement has a very marked character, sometimes exciting sudden faintness, sometimes a tendency to hysteria, sometimes a sensation of indescribable nature, almost amounting to pain ; in each variety differing from anything which has been experienced before. Other women, again, feel nothing at first beyond what is often described as an internal “fluttering,” as if a small bird were moving its wings within the body. In some cases of this kind, the sensation is so very little perceptible at first, that the mother cannot fix definitely the date at which it was first recognised ; while in others the first perception is striking, and clearly appreciable. The date of pregnancy at which this first impression of movement of the child occurs is somewhat variable. In the majority of cases it is not experienced before the end of the fourth month, and a common period of its occurrence is after the lapse of four and a half months from the commencement of pregnancy, thus indicating that the middle of the period of gestation has been attained. But in not a few instances it is experienced at a considerably earlier time ; at any time after three months of gestation it may be looked for ; and a few women, more especially in second or later pregnancies, are conscious of movements shortly after the end of the second month has been reached. On the other hand, some women are never conscious of the movements of

the child during the whole course of pregnancy, although to a doctor examining them the movements may be perfectly apparent.

After the first sensation of movement has been felt, it is usual to be conscious of similar feelings throughout the whole of the remainder of gestation. The movements of the child become progressively stronger as it grows within the womb, and the sensations consequently more apparent. They may be felt only at long intervals, days sometimes elapsing without much appreciable movement, or they may be almost continuously present.

It is probable that only the more violent movements of the child are felt by the mother, and that almost constantly slighter movements are going on of which she is not cognizant. But different children certainly vary very considerably as to the amount of notice they attract to themselves in this way; and conversely different mothers present striking contrasts in the extent to which they are incommoded by these movements. After six or seven months have elapsed, the movements can often be seen in the changes of projection they produce on the surface of the abdomen; and they can be felt very distinctly by the hand placed flatly against the skin over the womb. When the movements are at all marked, they afford an absolutely certain indication of the presence of a living child in the womb; and even when not very well marked, they are not apt to be mistaken for anything else. It must be conceded, however, that not unfrequently women very anxious for children are prone to imagine that they feel movements, even in the absence of any pregnancy.

The indication of the period of gestation reached is only moderately reliable, as the first sensation of movement may be felt at any time between the third month and the date of confinement; but read along with the following sign a considerably greater degree of accuracy can be reached.

Increase in Size of Abdomen.—In most women during the first three months of pregnancy, no increase of size whatever is observable; in fact, in not a few there is an apparent slight diminution in the usual curve of the abdominal walls. The reason of this is that during the first three months of pregnancy the womb lies below the level of the lower part of the abdomen, only rising above this between the third and fourth months. At that stage, unless women are exceptionally stout, there is usually noticeable a slight increase in fulness and size, in well-nourished women fairly uniform over the whole of the lower part, in thin women, projecting more in the middle and less at the sides. In thin women usually the projection can be felt as a distinct oval swelling at the lower part of the abdomen, varying in size at

the end of the fourth month from a cricket ball to an ostrich's egg.

After the increase in size has once become apparent, it progresses pretty uniformly, and very obviously; so that by the end of the sixth month of gestation the fulness extends quite up to the navel, and the prominence of the abdomen is marked. The increase in size is caused not only by the continual growth of the infant, but also by an increase in the quantity of the fluid which surrounds the child inside the womb. Variations in size in different women depend largely upon variations in the quantity of this fluid; but, in addition to this, the different figures of women undoubtedly result in great differences in the amount of visible enlargement. During the seventh and eighth months, the figure continues to enlarge, the projection rising higher in the abdomen until it reaches the foot of the chest, where the ribs end, and there is usually some increase in breadth from side to side, so that even when seen from behind, an increase in size is observable. In the last month of pregnancy, increase of size is not so marked; and frequently there is an apparent diminution by a slight lowering of the whole projection, the womb, about three weeks before confinement takes place, usually falling downwards a little within the abdomen.

Increase of size alone is, of course, a very uncertain sign of pregnancy, as it may arise from many other conditions; but in combination with the other signs and symptoms described above, or with even one or two of them, it is fairly diagnostic of pregnancy. When movements of the child are distinctly appreciated, the apparent extent of enlargement gives evidence of the probable date of confinement within a range of six weeks at the outside; and in many cases a doctor can foretell, by one or two examinations of size at intervals, much more accurately than this the date of the termination of pregnancy.

This concludes the list of signs and symptoms of which it is desirable that every married woman should be cognizant. It is hardly necessary to add that in many cases of pregnancy some of them will not be present, while others are liable to be misunderstood; and when a doubt exists, and a desire for certainty in the matter is felt, a trained medical man is able not only to appreciate at their proper value the signs which may be apparent to the expectant mother, but also to discover and elicit others which may often be sufficient to place the question beyond doubt.

CHAPTER IV.

MANAGEMENT OF UNPLEASANT ACCOMPANIMENTS OF PREGNANCY.

NAUSEA AND SICKNESS—ALLEVIATION BY TEA—BREAKFAST IN BED—EFFERVESCING DRINKS—CARE IN DIET—HEARTBURN—TEMPORARY MEANS OF RELIEF—WATER-BRASH—DIETARY FOR DISORDERS OF DIGESTION IN PREGNANCY—CONSTIPATION—ALLEVIATION BY DIET—REGULAR HABITS—DRUGS—WARM WATER—MINERAL WATERS—SALTS—SULPHUR—LIQUORICE POWDER—SENNA—ENEMAS—METHOD OF ADMINISTRATION—INJECTION OF GLYCERINE—SPECIAL SYRINGE DESIRABLE—SELECTION OF REMEDY—FAINTNESS—REMEDIES—CAUTION RESPECTING STIMULANTS—INCREASE IN SIZE AND SENSE OF WEIGHT—ARRANGEMENT OF CLOTHING—USE OF CORSETS—SUPPORTING BELTS—STRETCHING OF SKIN OF ABDOMEN AND BREASTS—CAUSE—RESULTS—PIGMENTATION—PREVENTION—ALLEVIATION—SWELLING OF FEET AND LEGS—ALLEVIATION—DISTENSION OF VEINS OF LEGS—TWO FORMS—DESCRIPTION—HEREDITARY TENDENCY—TREATMENT—PILES—INTERNAL AND EXTERNAL—TREATMENT—VAGINAL DISCHARGE AND IRRITATION—ALLEVIATION—USE OF INJECTIONS—PRECAUTIONS—BATHING—SLEEPLESSNESS—CAUSES—REMEDIES—CAUTION AGAINST USE OF NARCOTICS.

Morning Sickness.—The most usual discomfort associated with pregnancy is the morning nausea and sickness, which is fully described in the preceding chapter. This unpleasant symptom is often much alleviated and sometimes altogether removed by taking a cup of tea or of milk in bed before rising. When this is not sufficient, remaining in bed until about an hour after the usual breakfast will often be found useful. Effervescing drinks taken just before rising are sometimes of much value; a little soda or potash water, or, when constipation is present, effervescing citrate of magnesia or other similar preparation, may be employed. When the sickness tends to recur throughout the day, as well as in the morning, considerable care in diet is necessary. Foods difficult of digestion, such as pastry, cheese, and root vegetables as potatoes, carrots, or turnips, must be either given up altogether, or only taken in great moderation; and as a rule the use of all alcoholic beverages, and especially beer or ale, should be temporarily abandoned. While suffering from this affection, most women will find that a rather dry diet, consisting of white fish, poultry, game, milk puddings, and stewed fruits will agree best with them; while much fluid of any kind, even tea and soups, will increase their discomfort. It will be found generally advisable to make the

principal meal in the middle of the day, and to take only a very light meal in the evening. This will be found particularly important where heartburn complicates and accompanies the sickness and indigestion.

Heartburn is a sensation of acidity and burning in the pit of the stomach, often accompanied by pain radiating through to the back between the shoulders; and frequently attended by the rising into the throat, and even into the mouth, of a sour acrid fluid. It is most alleviated by a dry, careful diet, such as is described above; and is aggravated by indulgence in much sugar or sweets of any kind, and by alcoholic fluids. When heartburn is severe, temporary relief can usually be obtained by sipping slowly a solution of bicarbonate of soda in water. Half a teaspoonful of powdered bicarbonate of soda should be dissolved in half a tumbler of cold water; and this should be taken in successive teaspoonfuls every two or three minutes until the burning is relieved. This is much better and more effective than taking the same quantity in one dose. Fluid magnesia, such as Dinneford's, may be sipped in the same way as the solution of soda, but is not quite such a harmless or efficient remedy. Occasionally, when these remedies fail, a little slightly acid fluid is found beneficial. Some patients obtain considerable relief from small quantities of lemon juice in water; and temporary abatement has followed sometimes from eating rather acid apples. The latter, however, is not a very desirable remedy from other points of view. Powdered chalk in small doses, as much powder as can be heaped on a sixpence being taken as a dose, is occasionally useful; but if employed often is apt to cause constipation.

Water-brash.—Sometimes in the absence of heartburn, a watery fluid of a mawkish taste, or sometimes tasteless, is found to rise into the throat and mouth, and even to run out of the mouth. This affection is known as "water-brash," and is a not unfrequent accompaniment of other affections of the stomach, as well as of those connected with pregnancy. It is generally alleviated by a diet similar to that which is required when suffering from heartburn. Below is appended an outline of diet suitable for invalids suffering from sickness, heartburn, water-brash, or from any combination of these affections.

Dietary during Pregnancy.—1. Before rising in the morning, a small cup of recently-infused tea (not allowed to stand for more than five minutes) or of milk, either warm or cold.

2. For breakfast, one cup of recently-infused tea or coffee made with three parts of milk, or *thin* cocoa, made with equal parts of boiling milk and water, toast or *stale* bread, an egg, or a little

fresh white fish, such as sole, haddock, or whiting. Very little butter should be taken, no fresh rolls, or cured fish or meat of any kind.

3. For midday dinner, any kind of white fish, poultry, game, mutton, and lamb. Beef should be taken in great moderation, pork not at all. As vegetables, cauliflower, spinach, asparagus, and early Brussels sprouts are the most eligible; potatoes, turnips, carrots, parsnips, and artichokes are to be avoided. Milk puddings with a little stewed fruit may follow, but should not have much sugar added to them. Uncooked fruits should only be taken in great moderation; the best are grapes, bananas, and perhaps very ripe pears.

4. In the evening, a very light meal, consisting at most of a little white fish and a milk pudding, will be found most conducive to comfort; and it should be taken, if possible, at least two hours before going to bed.

5. When attacks of faintness seem to render it necessary, a small tumbler of milk and a biscuit may be taken between breakfast and dinner; and there is usually no objection to one small cup of tea in the afternoon, preferably with a good deal of milk in it, and accompanied by a plain biscuit or rusk.

When the regimen indicated above is insufficient to alleviate the discomforts of digestion, it will be necessary for the patient to avail herself of medical skill; and fortunately the resources of medicine can do much to subdue the more unpleasant manifestations of these gastric derangements. In some instances the invalid is obliged to restrict herself for a time entirely to liquid diet; but this should not be done except upon competent medical advice.

Constipation, or confinement of the bowels, is an exceedingly common discomfort, more especially of the earlier part of pregnancy. While it is perhaps worse in cases where vomiting is prominent, it is frequently present in the absence of any other symptom of disordered digestion. Where a healthy condition of the gastric digestion will permit of it, much may be done to remove the constipation by a carefully varied selection of diet. Many women find that oatmeal taken in the form of porridge for breakfast has a distinctly stimulating effect on the bowel; and it is an article of diet which many appreciate and enjoy. Oatmeal may also be taken in the form of oatmeal cakes or biscuits at other times. Again, the use in some quantity of green vegetables, such as cabbage, spinach, Brussels sprouts, or turnip-tops, has a strong influence in removing constipation, and assisting regular action of the bowels. Stewed fruits also, more especially perhaps figs and

prunes, are beneficial in this way, and valuable articles of food from other points of view.

It is most important, at the same time that one studies diet for the purpose of removing constipation, to make a regular practice of soliciting an action of the bowels at the same hour every day, and to give a sufficient time for this purpose. Just as one acquires a habit of being hungry at certain hours of the day associated with meals, and becoming sleepy at an hour associated with rest, so one can acquire the habit of feeling the want of relief of the bowels at a certain hour; and the habit being acquired, the bowels are more likely to act at that time than at any other. There is no doubt that both sickness and heartburn during pregnancy are much aggravated by constipation, so that the presence of these symptoms is an additional reason for giving both time and attention to the due performance of this function of nature.

When the diet indicated above, and the regular solicitation of the bowels are insufficient to effect the desired result, it is necessary to resort to some simple means of stimulating the bowel to increased action. This can be done in two ways, either by taking some drug by the mouth, which will act on the bowel indirectly; or by applying some stimulus to the interior of the bowel itself. Each method of action is eligible under varying circumstances.

When there is no troublesome morning sickness, many women find that a tumbler of hot water, taken on rising from bed every morning, is sufficient to produce an action of the bowels after breakfast. It should be taken as warm as can be comfortably drunk, and should be sipped slowly during dressing. The addition of a little fresh lemon-juice makes the water certainly more palatable, and probably somewhat more efficacious. When this is not found sufficient, the addition of a wine-glassful of one or other of the numerous natural mineral purgative waters to the tumbler of warm water, will often be effective and not very unpleasant. Of such waters may be mentioned Friedrichshall, Hunyadi Janos, Æsculap, and Franz Joseph as among the more frequently employed. The two latter are rather more palatable than either of the first mentioned. The ingredients of some of these waters are now sold as effervescent salts, which can be added to warm water and taken while effervescing. These are conveniently portable forms of the remedies. When sickness in the morning prevents the employment of the remedies just mentioned, or when they do not prove effective, some laxative drug may be taken at night; and among the more commonly used of these may be mentioned a teaspoonful of compound liquorice powder, or of electuary of senna, either of which may be taken nightly when required.

Sulphur lozenges, of which two or three may be taken at night, form a palatable, and, to many women, an effective laxative medicine, and do not seem to lose their effect by frequent repetition.

When medicines of this nature are ineffective, or when their action is accompanied by discomfort or pain, recourse may be had to direct stimulation of the lower bowel either by enemata of plain warm water, or by injections of glycerine, or by the use of glycerine suppositories.

Enemas of warm water, while very useful and harmless when employed only occasionally, are not eligible for habitual constipation. In many circumstances, however, they can be used to give immediate relief, and it is desirable for every woman to be familiar with the manner of their employment. For the administration of an enema some kind of syringe is necessary. The one which is most commonly used for this purpose, and which is eligible both on account of its low price and the simplicity of its construction is known as *Higginson's enema syringe* (see fig. 1). It consists

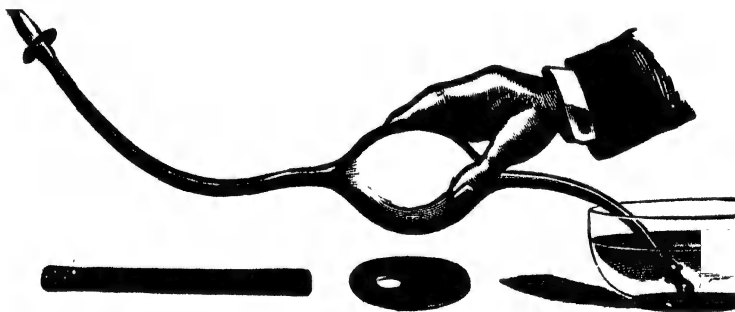


FIG. 1.—Higginson's Syringe.

essentially of an india-rubber tube with an enlargement in the middle, and a valve near either end which allows of fluid to pass only in one direction. The end which, in use, is immersed in the fluid is usually slightly weighted; the other end is terminated by an ivory nozzle, about two inches long. Accompanying the syringe as described above, is usually sold an additional longer nozzle made of gum elastic, which can be slipped over the ivory nozzle when the syringe is required for other purposes, to be described later on. The price of this syringe varies from about three to six shillings, according to the quality of the india-rubber of which it is made. It is usually sold enclosed in a box; but it is better to

keep it lying loosely in a drawer, as the curving to which it is subjected in fitting into the box is apt in time to damage the india-rubber. Its mode of action is very simple. If a basin of water be taken, and the end farthest from the nozzle be put into the water, by pressing with one hand the enlarged ball in the centre and relaxing the pressure two or three times successively, the water will be made to circulate through the tube and emerge from the end of the nozzle. The rapidity and force with which the stream emerges will depend on the amount of pressure applied to the ball, and the frequency of the alternations of pressure and relaxation.

In administering an enema the fluid to be injected is put into a basin or jug, and the weighted end of the syringe dropped into it. By one or two acts of pressure and relaxation of the hand applied to the ball, the syringe is filled with the fluid, until it is seen to begin to emerge from the nozzle. The nozzle should be then coated with a little vaseline or sweet oil, and gently pushed straight into the entrance of the bowel as far as it will go. There is usually a small collar round the top of the nozzle where it joins the india-rubber tubing, and the nozzle should be pushed into the bowel until this collar presses against the entrance. If the introduction is effected gently, it should produce no pain, nor even discomfort. When the nozzle has been inserted, the ball of the syringe is compressed and relaxed alternately until the whole of the fluid is injected into the bowel.

The fluid most commonly used as an injection is warm water, of such a temperature as can be quite comfortably borne by the hand immersed in it. When an injection slightly more stimulating is desired, occasionally some soap is rubbed down in the warm water before use. Sometimes thin gruel is used as an injection, in combination with a wine-glassful of olive oil, or half that quantity of castor oil. The *quantity* of fluid used for one injection is usually from a pint to a quart; but occasionally even more than a quart may be injected. It will be found that the greater the quantity that can be injected, the more efficient the resulting relief of the bowels will be; and there is no risk whatever of injecting too much, as, when the bowel cannot contain what is injected, it will always be pressed out at the side of the nozzle before it is withdrawn. The four points requiring attention in administering an injection satisfactorily are—

First, the proper introduction of the nozzle;

Second, the *slow* administration of the fluid;

Third, the occasional cessation of administration for a minute or two, if it is felt that it is setting up action too quickly;

And fourth, the retention, if possible, of the fluid for a few minutes after the nozzle is withdrawn.

The person receiving the injection will often feel after a small quantity has been injected as if it were impossible to retain it or receive more; but in one or two minutes, if the action of the syringe is intermitted, the bowel will again relax and receive the remainder. When as much has been injected as can possibly be retained, the nozzle is withdrawn, and the withdrawal is followed almost immediately by relief of the contents of the bowel, along with the fluid which has been injected.

Injection of Glycerine.—A very convenient method of obtaining action of the bowels without recourse to laxative medicine is found in the administration of a little glycerine. It is found that the injection of one or two teaspoonfuls of glycerine within the entrance of the bowel is followed usually within ten or fifteen minutes by relief of the bowels. A special small syringe is necessary for this purpose, as Higginson's syringe is scarcely suitable for the injection of such a small quantity as one teaspoonful. The most convenient syringe for the purpose is one made of vulcanite, just large enough to hold the quantity required. One such as is illustrated here (fig. 2) can be obtained from any chemist

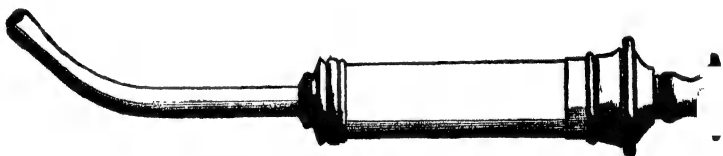


FIG. 2.—Glycerine Syringe (Maw).

at a very small cost. The syringe is filled by inserting the nozzle into the glycerine, and pulling out the piston; the nozzle is then gently pushed into the entrance of the bowel for an inch or more, and, by pressing the piston, the glycerine is injected within the bowel. Self-administration is very simple and easy; and as the action of the glycerine is that of a local stimulant, there seems to be no objection to the frequent repetition of the remedy when called for by constipation. It is not, however, equally effective with every one; while, on the other hand, the large injection of fluid with Higginson's syringe is always more or less effective; but as the latter acts chiefly by mechanical distension, its too frequent use is apt to be followed by permanent weakening and dilatation of the lower end of the bowel. The glycerine, instead of being injected by a syringe into the bowel, is occasionally made into a gelatinous suppository by the addition of gelatine; and the

suppository, coated with olive oil, is pushed into the entrance of bowel with the finger. In this form also it acts with considerable efficacy.

Faintness.—The occasional sensation of faintness, which not unfrequently is experienced in the earlier months of pregnancy, is best combated by lying down for a few minutes, and sipping slowly some fluid food. Cold water is often quite sufficient for the purpose, the essential point being the slow sipping, which acts as a temporary stimulant to the heart; but milk, or beef-tea, or soup may be taken when preferred. A not unpleasant and very valuable food which may be taken for this purpose is Valentine's Beef Juice, one or two tea-spoonfuls of which should be added to a small wine-glass of water. When there is a tendency to hysteria along with the faintness, half a tea-spoonful of sal volatile in a small wine-glass of water is useful. It is most important that stimulants should not be resorted to for the relief of this symptom. Although they may temporarily remove it, they pre-dispose to its occurrence, and are apt to intensify any other discomforts which may be present, as well as to do injury in other ways.

Increase in Size, and Sense of Weight.—After the end of the third month of pregnancy, a slight increase in size is usually perceptible, and it is not uncommon to have a sense of having some little weight to support. It is most important, from this time onwards, that no pressure from undue tightness of clothing should interfere with the proper and normal ascent of the womb within the abdomen. Generally speaking, corsets can be worn with comfort up to the end of the sixth month of pregnancy, if care be taken to adjust them to the size required; and often a well-adjusted corset will afford considerable support. But all compression of the waist must be avoided; and as far as possible any heavy clothing worn should be suspended from the shoulders rather than from the waist. When any sense of weight is experienced, much relief and comfort are often obtained from wearing, below the corset, a belt which will support the lower part of the abdomen. A sketch is appended of a belt, known as Mme. Cavé's Patent Belt, which fulfils this purpose very satisfactorily; it is kept in its place by hooks on the corset, and the bands at the side admit of considerable adjustment to varying size (fig. 3).

After the completion of six months of pregnancy, most women will find that their comfort is increased by giving up the wearing of corsets. When a sense of weight, or of dragging at the sides is felt, a belt somewhat larger than the one described above will

be found helpful. A sketch is annexed (fig. 4) of a belt of the shape most useful, most women who have some skill in the use of a needle would be able to make one for themselves of similar design, at comparatively little cost. The best material of which to make a belt of this kind is either calico, or strong towelling; and the belt should be gored slightly in front to fit the figure, and stiffened with one or two strips of thin whale bone, or one or two skeins of cotton, inserted between two layers of the material

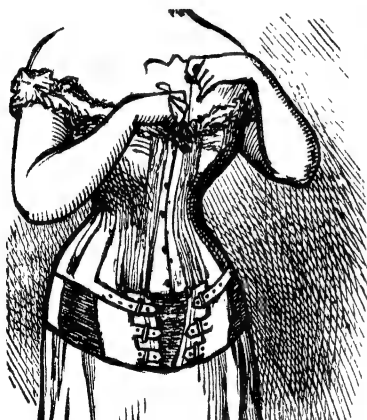


Fig. 3.

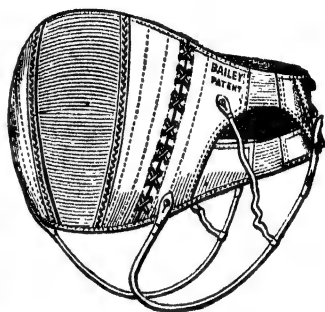


Fig. 4.

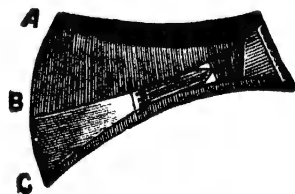


Fig. 5.

Abdominal Belts.

selected. It is generally most convenient to make it fasten at one side, not at the back, and the best fastening is by straps and buckles. Of belts for this purpose sold ready-made, those known as "Domen Belts" may be mentioned as comfortable and economical.

Stretching of Skin of Abdomen and Breasts.—The elasticity of the skin covering the abdomen varies greatly in different women. In the later months of pregnancy it is subjected to considerable stretching; and this very frequently results in some alteration in the appearance of the skin. Whitish lines, from a

quarter of an inch to an inch broad, of more glistening appearance than the surrounding skin, are seen slanting from the sides of the abdomen towards the middle line at intervals of one or two inches ; and these lines tend to increase in width and length as pregnancy advances. They are known to physicians by the Latin name of *liniæ albicantes*, and give a very distinct impression of skin stretched beyond its elastic power, just as india-rubber might be overstretched. When they appear in persons of dark complexion, the white colour is usually replaced by a brown pigment, and they are found as darker coloured streaks on the natural skin. When once clearly produced, they very seldom disappear entirely in after-life, although after confinement they become much narrower and less distinct. Usually, in a few months after confinement, they become entirely white, even in cases where before confinement they have been deeply coloured, and remain as white streaks on the abdomen throughout life, affording often a reliable indication of the previous occurrence of pregnancy. Similar lines, although very much smaller, occasionally occur on the breasts when much distended with milk. As this distension only happens with most women after childbirth, the streaks are only formed after the confinement has taken place ; but in those cases where milk is present in considerable abundance before the birth of the child, these lines may be found at a late period of the pregnancy. The lines on the breasts, as on the abdomen, are usually permanent in after-life ; but if they are only slight they may disappear without leaving traces. The formation of these lines on the skin of the abdomen is sometimes accompanied by some sense of discomfort and even pain, which is described as a sensation of stretching and dragging.

Their appearance on the abdomen may sometimes be entirely prevented by wearing continuously a belt such as has been described above ; and in cases where the distension of skin is too great to admit of prevention, the wearing of the belt will usually diminish their extent and size, and will also much alleviate any suffering which they may cause. There is some reason to think that the inunction of oil, such as olive or linseed oil, increases the elasticity of the skin ; and as they are perfectly harmless applications, it is well, on the slightest appearance of stretching, to rub into the skin, morning and evening, one of those oils. The inunction is also useful in the alleviation of discomfort.

To the breasts it is more difficult to apply treatment. There is no objection to the gentle rubbing with olive oil ; but any undue pressure upon them to prevent enlargement might injure the secretion of milk, besides possibly doing harm in other ways. In cases

where a loose corset can be worn with comfort during the later months of pregnancy, the support of the breasts on pads within the corset may assist in preventing excessive stretching; for the stretching is generally more noticeable on the upper than on the under surface of the breasts. Pads for the purpose can be easily made of cotton wool covered with linen, and stitched inside the upper part of the front of the corset.

Swelling of Feet and Legs is a not unfrequent source of inconvenience in the later months of pregnancy. It is generally due to the pressure of the womb, as it increases in size in the abdomen, on the veins which convey the blood returning from the legs, the circulation being thus impeded. When the swelling is slight and confined to the feet and ankles, it is not usually of much importance, nor does it give much annoyance. But when considerable, and extending up to or beyond the knee, it not only impairs to some extent the walking powers, but also produces a sense of heaviness and fatigue. The main importance of the existence of swelling in the feet and legs is, that it is in some cases an indication of the presence of some congestion of the kidneys, which is apt to lead to future harm if not attended to. So long as the swelling of the feet and legs is slight, so long as there is no swelling of the eyelids or other parts of the face, while the general health remains good, and the quantity of urine normal in amount and colour, the patient need not have any anxiety about the existence of this symptom; but if the swelling is considerable in the legs, and appears at all in the face, it is very desirable that she should consult a medical man on the matter.

In the slighter cases, the use of a belt to support the womb often relieves the pressure on the veins sufficiently to obviate the swelling of the legs; and if that does not suffice, raising the legs on a chair while resting, or lying on a couch for one or two hours daily, will prevent any discomfort. Gentle rubbing upwards of the legs for a quarter of an hour, once or twice a day, will much assist in reducing swelling. Simple slight swelling of the legs should never be an excuse for omitting one's usual exercise.

Distension of the Veins of the Legs sometimes occurs as a further result of pressure upon the veins which conduct the blood from the legs. It is met with in two forms. More generally, there is an increase in size of all the smaller veins in the skin of some part of the leg, so that the course of each small vein can be distinctly seen, and the leg is covered with a network of reddish-blue blood-vessels. Such general increase in size is apt to occur in patches in different parts of the leg—the inner and outer sides of the thighs, and the inner side of the leg and ankle being frequent

sites. The surface of the skin over them is smooth, and there are no projecting veins forming swellings on the skin.

In the other form, one or two large veins are enlarged and swollen, and form projecting and discoloured lines along the legs and thighs. The lines are of a deep blue colour, and are somewhat tortuous; one may often be traced continuously from the ankle to the top of the thigh. When they are very conspicuous, they are usually more or less knotted as well as tortuous; and are always worst in the inside of the leg and thigh, although occasionally found as well on the outside.

To this second form more particularly the name of **varicose veins** is usually given. The two forms may be, and often are, found together in the same person. Those distended and varicose veins are not by any means peculiar to pregnancy. The tendency to them is usually hereditary, and has probably some relation to the inherited diatheses of gout and rheumatism. But this tendency may be dormant until excited by some cause, and pregnancy is undoubtedly one of the most frequent exciting causes of distended and varicose veins in women. As the majority of women escape this discomfort even after repeated pregnancies, it is probable that pregnancy of itself, in the absence of any hereditary tendency, is not sufficient to cause this condition of veins. In many instances, even when the distension is considerable, complete recovery follows the confinement, recovery being more frequent in the first than in the second description.

When either form appears, its extension can often be prevented by attention and care. As in the case of swollen legs, the use of a belt, and occasional resting with the feet elevated, will go far to relieve the pressure upon the veins. Special attention to the regular action of the bowels is also of much importance; and even where there is a natural daily action, it is usually of advantage to take some mild aperient medicine once or twice a week. Regular exercise is also of great use in distension of the veins. The muscular action of the leg involved in walking is markedly beneficial in assisting the circulation of the veins, and obviating the tendency to varicosity. On the other hand, standing still or sitting with the legs hanging down is prejudicial; and if the distended veins are present in the leg as well as in the thigh, it is always well to rest with the legs supported on a chair or on a sofa. If the distended veins are present only in the thigh, there is not the same objection to sitting with the legs hanging down; but standing should be avoided.

When the second form of distension exists—in other words, when varicose veins are present, it is desirable to support them by

the external pressure of a bandage or an elastic stocking. If a bandage is employed, the best material is thin flannel, or domette; thin calico also may be used. At whatever part of the leg the varicose vein may be situated, the bandaging must be commenced at the foot and carried upwards to a point one or two inches above the upper end of the varicose part. The most convenient width for a bandage is three inches, and the length will depend upon the height to which the limb is to be bandaged. If only to below the knee, a bandage of five yards long will be sufficient; if it is to be carried half-way up the thigh, about nine yards will be required; while, if the whole of the thigh as well as the leg requires support, a bandage of twelve yards will be necessary. Generally, the bandage may be left off at night on going to bed, and put on before rising in the morning; but there is no objection to its being worn all night if comfort is derived from its use.

Elastic stockings must be obtained from a maker, and are usually made to measure. They can be had in two materials, silk and cotton; and different qualities of each of these materials are met with. The silk are the more expensive, but are more durable and more comfortable than the cotton ones. The durability, however, is not of so much importance when worn during pregnancy, as it will generally be found that the stocking worn during pregnancy will be too large to be of use after confinement, so that, if required at all afterwards, a smaller one must be obtained.

Elastic stockings are injured by being worn at night; they should therefore be taken off on going to bed, and put on before rising in the morning. If any support is required for the veins at night, a bandage should be used; the stocking being removed, and the bandage put in its place while lying down.

Piles or Hæmorrhoids are often the cause of considerable discomfort during pregnancy, appearing often at a very early stage, and continuing more or less throughout the whole course. The predisposition to piles is hereditary, and is closely associated with the tendency to varicose veins in the legs; in fact, in their commencement, piles are really small varicose veins in the neighbourhood of the opening of the bowels. They appear, however, often during pregnancy in patients who have no hereditary predisposition to their occurrence, their appearance being due in many cases to constipation.

Piles are met with in two forms. In the first, which are called **internal piles**, there is nothing to be seen on external examination, and their presence is usually indicated by the appearance of a little blood after the bowels have been moved. Frequently, also,

some streaks of blood will be found on the motions. The amount of blood lost after a motion of the bowels varies very much in different persons, seldom probably exceeding one or two table-spoonfuls, and in many cases not amounting to more than one tea-spoonful. If the motion is at all hard, its passage is often followed by pain, lasting for some time, generally of a burning character. Frequently, however, no pain is experienced, and the presence of blood is the sole indication of the existence of piles. Sometimes, when an internal pile is large, or when it is situated immediately within the opening of the bowel, it will come down into the opening after the bowels have acted, and being squeezed in the opening will give rise to much pain, which can usually be relieved at once by pressing the pile with the finger upwards into the interior of the bowel.

External piles appear as small swellings, varying in size from a pea to a marble, round the margin of the opening of the bowel, and occasionally partly within it. When not inflamed, they are of the colour of natural skin, or of a bluish tinge similar to that of a vein seen through the skin; they are apt to vary a little from day to day both in colour and in size. When large, they cause some discomfort in sitting, and sometimes also when walking, and are often very painful for some time after an action of the bowel. External piles do not bleed. Occasionally they become inflamed, and are then acutely painful. When attacked by inflammation, they may increase in size so much as to attain the dimensions of a hen's egg. Their colour becomes changed to a dusky red, and the reddened skin becomes so tense as to appear partly translucent; not infrequently it gives way here and there, and small superficial ulcers covered with a little matter appear on the surface. It is very seldom, however, that the inflammation progresses so far as to form an abscess; after a few days' rest and care it usually subsides, and pain disappears.

The occurrence of piles may be often prevented by proper attention to regularity in the action of the bowels, by due support of the abdomen, and by warm clothing. When they do occur, either internally or externally, the same precautions will in the majority of cases obviate much of the discomfort to which they sometimes give rise. When internal piles bleed much and often, it is very desirable to obtain medical assistance, as a daily loss of even a small quantity of blood is quite sufficient to impair considerably the general health.

If an internal pile descend after the bowels have been moved, and remain painfully grasped by the opening of the bowel, it should be carefully pressed upwards with the finger, coated with a

little vaseline or sweet oil, until it recedes completely within the opening.

External piles are often much reduced in size, and rendered less sensitive, by sponging them with cold water morning and evening. In some cases sponging with water as hot as it can be borne gives greater relief. Standing much on the feet is apt to increase their size; and the recumbent posture for an hour or two daily will often do much to render external piles innocuous. When they become inflamed, rest in a recumbent position is absolutely necessary; and great comfort is derived from frequent warm fomentations, and from the application of linseed poultices. When piles are inflamed, it is generally desirable to abstain entirely from all alcoholic fluids. Much attention should be given to the regular daily action of the bowels; and if necessary some liquorice powder should be taken every night, or two or three sulphur lozenges every morning.

Vaginal Discharge and Irritation.—During pregnancy there is not unfrequently more or less discharge from the vagina, sometimes of a watery character, at other times of a more thick and creamy appearance. It seldom exists to such an extent as to render it necessary to wear a diaper; but not unfrequently the discharge is rather irritating, and causes itching and some degree of soreness externally. This itching and soreness are usually much alleviated by bathing the parts once or twice a day with warm water alone, or with warm water in which some bicarbonate of soda, or some borate of soda has been dissolved. A convenient strength of lotion is made by dissolving a full teaspoonful of either of these salts in a pint of warm water. If such a lotion is not sufficient to allay the itching, the application of some carbolized vaseline two or three times daily may be tried. When the discharge is excessive in quantity, or very irritating in character, it may be necessary to syringe the interior of the vagina once or twice daily with warm water, or with such a lotion as is given above. For this purpose a Higginson's syringe, such as has been described on p. 23 for administering enemas, is employed, the longer terminal tube being placed over the ivory end. This gum-elastic tube being covered with vaseline, after the syringe has been charged with the warm water or lotion and the weighted end left immersed in it, is introduced gently into the vagina for two or three inches, and the lotion injected by successive gentle compressions of the ball of the syringe. The lotion, after coming in contact with the interior of the vagina, escapes at the sides of the gum-elastic tube.

Women who can bear cold bathing well will often find that a

cold bath, and where possible a sea-water bath, taken regularly every morning, is very efficacious in curing both the excessive discharge and the consequent irritation. It may be remarked here that to those who in ordinary health enjoy sea-bathing, there is no risk from open-air bathing during pregnancy; and often the influence of sea-bathing under these circumstances is distinctly beneficial to the general health.

Sleeplessness is occasionally the source of considerable discomfort in both the earlier and the later months of pregnancy. In the earlier stages, it is usually due more directly to discomforts of digestion or to attacks of palpitation; while, later, the disturbing movements of the child, and difficulties of position owing to increase of size, interfere occasionally with sound slumber. Any treatment must be directed to the cause upon which the sleeplessness is dependent. Care in diet, and regulation of the action of the bowels, will assist much in sleeplessness due to indigestion.

When the movements of the child are troublesome, the wearing of a belt or binder at night, as well as during the day, will often render them more tolerable, and apparently sometimes even less violent. The binder is also useful where the enlargement of the figure makes the attainment of a comfortable position difficult; and some assistance towards this can also be obtained by the disposal of small cushions or pillows in such a way as to give support where it may be required.

Narcotic drugs for producing sleep should **never** be taken except under medical advice. In many ways they may do injury, not only to the mother, but also to the infant, and their use is justifiable only under conditions laid down by a qualified doctor.

CHAPTER V.

MISCARRIAGE, ITS CAUSES, RISKS, PREVENTION, AND MANAGEMENT.

DEFINITION OF MISCARRIAGE—USUAL PERIODS OF OCCURRENCE—EARLIER MISCARRIAGES—DIFFICULTY OF RECOGNITION—NECESSITY OF CARE AFTER THEIR OCCURRENCE—CAUSE OF MISCARRIAGE—INDICATIONS OF THREATENED MISCARRIAGE—DISCHARGE OF BLOOD—PAIN—PREVENTIVE TREATMENT—REST—COOLNESS—LIGHT DIET—INDICATIONS FOR MEDICAL AID—NECESSITY OF PATIENCE—SYMPTOMS OF INEVITABLE MISCARRIAGE—DESCRIPTION OF ABORTION—INDICATIONS OF COMPLETE REMOVAL—RESULTS OF INCOMPLETE REMOVAL—CONVALESCENCE FROM MISCARRIAGE—NECESSITY OF REST—VALUE OF SYRINGING—PREPARATION OF LOTIONS—DIET DURING CONVALESCENCE—OCCASIONAL DISCOMFORT OF BREASTS—FINAL REMARKS.

The term **miscarriage** or **abortion** is usually applied to the premature birth of the infant at any time during the first six months of pregnancy. After the first six months, if confinement takes place before the usual period of nine months has elapsed, it is generally called *premature confinement*. Although miscarriage may occur at any period within six months after the commencement of pregnancy, it most commonly takes place either about one month after the time of conception, or between two and a half and four months after that date.

The earlier miscarriages, after about one month's pregnancy, are not generally regarded as of much importance, and in many cases their character is not recognised, the accompanying discharge of blood being mistaken for an ordinary monthly period, postponed a little in date and slightly increased in amount. Very frequently it happens in married women that the usual monthly period is one or two weeks late, and is accompanied by some amount of pain, and more or less increased flow of blood; and it will often be noticed that in such a case the flow lasts somewhat longer than usual, and may be followed for some days or even longer by a colourless or yellow discharge. The explanation of these exceptional conditions is usually the occurrence of an early miscarriage; and while in most instances no ill effects are left behind, it is not very uncommon to find some uterine discomfort, in the form perhaps of continuous slight discharge from the vagina or aching of the back after much exertion, owing to its origin to a miscarriage of the kind described. If any of the symptoms of pregnancy have been observed prior to the postponed discharge, little doubt can exist as to its nature;

and, when such indication exists, it is always judicious to try to avert any evil consequences by resting quietly for two or three days, avoiding all fatigue and exposure to cold, and spending at least part of the day recumbent on a couch. It should always be borne in mind that miscarriage at any period, early or late, of pregnancy, is an abnormal process which necessarily involves some degree of injury to the womb; and it is a fact well recognised by the medical profession that neglected miscarriages are attributable a great number of the more common diseases of the womb so frequently met with in practice. The importance, therefore, of care and circumspection during such an occurrence ought to be fully recognised by every married woman.

Causes of Miscarriage.—For the early miscarriages just described, it is not easy to point to any cause beyond mentioning the general fact that throughout pregnancy there seems always to be some slight tendency to miscarriage at such dates as would correspond to the monthly periods, which are usually suppressed during pregnancy; and this tendency is probably stronger about the time of the first monthly interval after pregnancy has commenced.

The causes of later miscarriages may be found in circumstances connected either with the mother or with the child. There seems no doubt that some women have an innate tendency to miscarry, even when apparently in perfect health, the explanation probably lying in some irritability of the nervous system. There is also a tendency to repetition of miscarriages at about the same period of pregnancy, even in cases where the first miscarriage may have been due to accidental causes.

Any illness which has enfeebled temporarily or permanently the constitution will predispose to miscarriage; and *mental anxiety and worry* probably act in a similar manner. *Acute diseases* accompanied by fever have a very adverse effect on pregnancy, and *high fever* from any cause always endangers its continuance.

Imprudent conduct, such as over-fatigue in walking, or riding, or dancing, has a tendency to induce miscarriage, and there is especial risk in exercise involving sudden shocks, such as jumping on horseback. *Sudden mental shocks*, especially those of a startling or alarming character, account for a considerable number of miscarriages. The most important cause of all referable to the mother is probably the *existence of slight disease of the womb*, or of tissues in the neighbourhood of the womb. Some diseases of this organ in their slighter forms produce comparatively little discomfort, and partly from this reason, and partly from motives of

delicacy, are not unfrequently entirely neglected ; and the penalty of the neglect is incurred in the form of successive miscarriages, which in their turn eventually aggravate the previously existing disease to which they are to be attributed.

Miscarriages, again, are not unfrequently due to some disease affecting the infant in the womb. There is no doubt that from the very beginning of pregnancy, the infant itself is liable to disease, independently altogether of the state of health of the mother. These diseases frequently terminate in the death of the child within the womb, and miscarriage usually ensues very soon afterwards.

Indications of Threatening Miscarriage.—In most cases of threatened miscarriage, the first symptom which attracts attention is the *discharge of blood from the vagina*. Very frequently, prior to this occurrence, some indefinite sensation of discomfort may have been experienced. Sometimes the commencement is indicated by sensations of cold, and even shivering, followed by slight fever ; in other cases, sensations of weight at the bottom of the abdomen, a feeling of cold there, and perhaps slight occasional attacks of pain low down in the back or abdomen, may have awakened suspicions of possible risk. Occasionally, a considerable amount of *pain in the lower part of the abdomen* is felt before any discharge is observed. The pain is usually of a very characteristic description, resembling somewhat that of colic, and being regularly intermittent, the intermissions, as a rule, lasting longer than the paroxysms of pain. The regularity and the situation of the recurrent spasms generally are sufficient to distinguish them from those due to colic of the bowel. Even in those exceptional instances where pain is the earliest prominent symptom, the discharge of blood soon follows ; and the combination of the two indicate conclusively the imminent risk of miscarriage.

The amount of discharge varies very much in different cases, and at different stages. At first it is generally slight, and may resemble very much that of an ordinary monthly period ; but it generally increases to a degree much beyond this if the miscarriage progresses.

After the discharge has existed for some variable time, an amount of pain is usually felt in the lower part of the abdomen, beginning in slight rhythmical spasms at intervals of some minutes, and becoming gradually more severe, with shorter intervals between the spasms. As the pain increases, the amount of discharge usually increases also, and in a few cases becomes so much as to excite considerable alarm.

Preventive Treatment.—Since it is almost always impossible to know whether the threatened miscarriage is due to the death of the infant in the womb, or to some condition relating to the mother which may be remedied, it is judicious and right always to presume that the infant is alive, until distinct evidence of its death is obtained, and accordingly to take what measures are calculated to prevent the progress of the miscarriage, and ensure the safe progress of the pregnancy ; and it is encouraging that in many cases, even where the discharge has been considerable and the pain troublesome, judicious means are successful in arresting the unhealthy action of the womb, and saving the life of the threatened infant.

With this end in view, it is the imperative duty of every woman who has the prospect of becoming a mother, when the first symptoms of threatening miscarriage appear, to remain completely at *rest in the recumbent position*. If there is no symptom except the coloured discharge, and if this is not excessive in amount, judged comparatively with the usual monthly period, it may not be considered necessary to summon medical assistance ; but the maintenance of rest in the horizontal position is of essential importance. The atmosphere of the room should not be too warm, and excessive warmth of clothing or bed-clothes should be avoided. Diet should be light and easy of digestion, preference being given to milk-food and fish ; and the food taken should not be very warm, as heat of any kind is apt to increase the amount of discharge, and the consequent risk of miscarriage. There is no objection to thickened soups or to tea, if taken when slightly cooled. When miscarriage is threatening, purgative medicines which are at all likely to act violently should be carefully avoided. It is not, however, well to allow the bowels to become too confined ; and when necessary, a little castor oil or liquorice powder may be taken, or the bowels may be acted on by an injection of glycerine.

If the discharge becomes excessive in amount, or if pain to any great extent supervenes, it is very desirable that medical assistance should be obtained as early as possible.

To most women the management of their health when a miscarriage is threatening will be found rather a trial of patience. Not perhaps always realising the importance of the matter, and the necessity of what may appear severity of restriction, the maintenance of rest and the restraint of diet to many are apt to appear unnecessarily irksome. A comparatively light discharge, unaccompanied by pain, will occasionally persist for some weeks ; and it will generally be found to increase when movement is

made, or when the erect position is assumed. To a woman accustomed during her ordinary monthly period to lead her usual life, this may seem a very poor reason indeed for giving up entirely her ordinary avocations, and adopting for a time the rôle of an invalid. But the importance of the object sought will be more fully recognised when one realizes that a human life is at stake—a young life, it is true, but one which, if preserved by a few weeks' care and self-sacrifice on the part of the mother, may attain to many years of future usefulness. There are very few conditions in which the full confidence of a patient in her medical attendant is more demanded than when she is under treatment for threatened miscarriage. Patients, as a rule, are very desirous that their medical attendant should at least "do something"; while in many cases of the kind under description, much the best method of conducting the pregnancy to a satisfactory conclusion is to do nothing, beyond exercising a careful and judicious observation. True it is that medical science is in possession of drugs which serve to allay pain when severe, and to restrain excessive uterine action; but in a considerable number of cases the employment of such drugs is not required. The symptom which most usually calls for medical treatment is the existence of excessive discharge. When rest, coolness, and abstinence have been insufficient to keep the discharge within such limits as will not seriously impair the strength of the patient, there are other resources within the means of a medical man, which can always be relied on to arrest the bleeding. These means, however, rather tend to provoke than to restrain the tendency to miscarriage, and are therefore not generally employed until the necessity of arresting the discharge becomes quite apparent.

If the means described above are not sufficient to arrest the progress of the miscarriage, it will be found that the intermittent paroxysms of pain continue with greater frequency and severity, while the discharge will persist. As a rule, the discharge is not characterised by any odour; and if in the absence of any local treatment to arrest the bleeding a distinctly disagreeable or fœtid smell is perceived, a fairly reliable indication is given that the infant is dead, and that therefore further efforts to prevent miscarriage are superfluous. The object thereafter aimed at is to conduct the miscarriage to its termination with as little delay as possible. But here also may often be found the value of the advice of the Latin motto, *Festina lente*—"Speed gently." One of the difficulties connected with miscarriage is the tendency of the womb at this stage to expel part of its contents and retain another part, instead of ejecting the whole at one time. At about

the end of the third month of pregnancy the contents of the womb may be thus described. The interior cavity of the womb at this period varies from about the size of a cricket-ball to that of a croquet-ball or cocoanut. This is almost completely occupied by a membranous bag filled with a watery fluid, in which floats the young infant, at this period from four to five inches in length. From the navel of the infant a thin cord proceeds to one point in the interior of the bag, and this cord is the only connection between the infant and the mother, excepting, of course, the watery fluid with which it is surrounded. Coming from the navel of the child, it passes through the bag, and is spread out in a sort of cushion attached to the inside of the womb, which is known as the "placenta." The bag of membranes and the placenta together entirely fill the cavity of the womb. The placenta is fleshy in appearance, round or oval in shape, and about half an inch to an inch thick in the centre, becoming thinner at the edges. One side of it is closely attached to the outside of the bag of membranes, the other is adherent to the internal wall of the womb.

During the progress of a miscarriage which has become inevitable, the bag of membranes usually bursts, and the contained watery fluid escapes along with the discharge of blood. In many cases the enclosed infant comes away soon afterwards, and is found outside the vagina, attached only by the cord to the placenta, which is still adherent to the womb. The cord varies very much in length, and in many cases is quite long enough to allow the child to escape entirely from the vagina, while still attached to the placenta; but if it is not long enough for this, it usually breaks, and the attachment to the placenta is thus lost.

In those cases where the infant is expelled before the placenta has become separated from the wall of the womb, it not unfrequently happens that the womb ceases for a time its effort to expel the whole of its contents, and, closing up to some extent after the expulsion of the infant, encloses within its cavity the adherent placenta and attached membranes. The enclosed placenta then begins to decompose, and keeps up a foetid discharge, accompanied sometimes by considerable bleeding, which is not only very disagreeable and annoying, but also injurious to the general health.

In guiding a miscarriage to a satisfactory conclusion, the main object of the medical man is to secure, as far as possible, that the cavity of the womb shall be entirely emptied of all its contents, including the infant, the placenta, and the membranous walls of the bag. It is found generally that the most satisfactory method of accomplishing this is to abstain as far as possible from hurrying the process of miscarriage. For a satisfactory termination to a

miscarriage, two conditions at least are necessary: one that the mouth or entrance of the womb at the upper end of the vagina should be sufficiently open to allow the infant and placenta to come out; the other, that the connection between the placenta and the interior wall of the womb should be severed completely, or at least to a considerable extent, before the infant is expelled. Both these conditions are effected slowly by the successive contractions of the womb, which are the cause of the rhythmical paroxysms of pain; and if the process of miscarriage is too rapid or hurried, difficulties are very apt to arise from the continued adherence of the placenta to the womb. As the cause of the bleeding during a miscarriage is the separation of the placenta from the wall of the womb, it will be easily understood how the retention of the placenta is usually accompanied by bleeding as well as by foetid discharge. When the placenta is thus retained, medical aid and observation are urgently required; and no patient can be considered convalescent until it has come away by itself or been removed by the skill of the doctor.

When a miscarriage is of the normal character, no one will have difficulty in recognising the separate contents of the womb, which have been described above—the infant or foetus, as it is usually called, the placenta, and the membranes. It happens, however, not unfrequently that the appearance of the contents is modified in various ways. Sometimes the bag of membranes bursts on the first appearance of bleeding, and the blood may be poured into the bag of membranes, displacing the watery fluid. When this occurs, the infant is destroyed by the surrounding blood; and the membranes enclosing the blood, along with the placenta external to them, may come away with the appearance of a large clot of blood. Occasionally the placenta is attacked by disease, and as the infant depends for its nutrition through the cord on a healthy condition of the placenta, the disease of the placenta is followed by the death of the infant, and the resulting miscarriage has a quite abnormal appearance. And, again, in cases where the infant has died from some disease, miscarriage may not take place at once, and the placenta and dead infant become much altered in appearance during their retention in the womb.

In consideration of these facts, it is always very desirable that any solid body coming from the womb should be kept for the inspection of the medical attendant. Anything of the kind is best kept for inspection in a little water; and if it is disagreeably foetid some *colourless* disinfectant, such as Sanitas or carbolic acid, may be added; but no disinfectant which will alter its colour or appearance should be employed.

In general, the medical attendant will be able to satisfy himself by inspection of the miscarriage and by other means of the completeness of the removal ; but in some cases it is quite impossible to be absolutely sure that no small fragment of placenta has been left behind.

The *complete evacuation of the womb* is usually followed immediately by complete cessation of the pain which, in most cases, has been experienced during the progress of the miscarriage. Sometimes slight pains occur at intervals for twenty-four or thirty-six hours after the completion of the miscarriage. This is not, however, common ; and when such attacks of pain do occur, their intensity is slight, and their subsidence rapid. The continuance of pain for more than forty-eight hours after the apparent removal of the miscarriage would indicate the necessity of medical examination, and the probability of retention of some of the contents of the womb.

The *discharge also diminishes* rapidly after the contents of the womb have been completely removed. Not unfrequently, the arrest of the discharge is almost immediate and complete ; but more generally it subsides gradually, being of a red colour for two or three days, and changing gradually from red to green, then becoming yellowish, and finally ceasing. While the discharge is disappearing, it is not unusual to observe it occasionally becoming rather more red-coloured and profuse after any undue exertion or excitement ; and if this alteration is only temporary, lasting perhaps for a few hours or a day, it is not of much importance, except in so far as it indicates the desirability of continued care and rest. If, however, it becomes again of a very bright red colour, and is excessive in quantity, or continues of this character for more than one or two days, it is probably indicative of incomplete evacuation, and calls for medical attention.

Convalescence from Miscarriage. — During convalescence nothing is so important as **rest** in the recumbent position, maintained for at least one week. It has been remarked previously that one of the most fertile causes of minor diseases of the womb is neglected miscarriage. After such an occurrence, the womb is left bruised, sometimes slightly lacerated, its inner surface raw and sensitive, and its whole weight increased ; and the womb itself, and also the tissues in its neighbourhood, are very prone at such a time to be affected with inflammation, which is sometimes of rather intractable character. While it is incorrect to say that inflammatory consequences are always due to imprudence, there is no doubt that in many cases they can be distinctly attributed to some want of care ; and they are always aggra-

vated, even when not caused, by injudicious laxity after miscarriage.

The *duration of the rest* required varies considerably with the character of the miscarriage, and the duration of the pregnancy, as well as with the general state of health of the mother. In most cases of miscarriage at about the end of the third month of pregnancy, the patient may be allowed to sit up in bed to meals after three or four days have elapsed ; and may change from bed to a sofa at the end of a week. Persistent aching of the back on sitting up is an indication that caution must be exercised ; and it is always much better to remain recumbent for a few days longer than to risk the straining of the uterine ligaments, of which the backache is often a symptom.

When the discharge has entirely disappeared, and the sitting posture can be maintained for one or two hours without fatigue or aching, some amount of walking may be permitted ; and the normal manner of living is gradually resumed.

During the convalescence, great comfort is often experienced from *syringing the vagina* twice daily with warm water, to which some antiseptic fluid may be added. The discharge is not unfrequently foetid in odour, and sometimes rather irritating in character, and the syringing removes the fœtor and reduces the irritating quality of the discharge. An ordinary Higginson's syringe may be used for the purpose, with the larger gum-elastic end slipped over the ivory end ; and as antiseptics Condý's Fluid, Sanitas, Jeyes' Disinfectant, or carbolic acid may be employed. A convenient antiseptic lotion is made by adding two tablespoonfuls (one ounce) of any of the first three, or one tablespoonful of the last mentioned, to a pint of warm water.

Diet during Convalescence.—While a somewhat restricted diet has been indicated as appropriate during any threatening of miscarriage, after its completion a more liberal regimen is desirable and proper. Soups, fresh fish, fowl, game, and mutton with vegetables, may be taken, and there is now no objection to the food being warm. The addition of some stimulant to the diet is often valuable, a little wine or stout forming an eligible addition to meals once or twice daily. Indigestible articles of diet, such as cured fish, richly seasoned dishes, and pastry, should be avoided.

Fulness of the Breasts.—In a limited number of cases of miscarriage, some degree of fulness of the breasts, with sensations of tension and tenderness, is experienced ; and there may be a slight flow of milk from the nipples. If this occurs, it is judicious to limit the diet for a day or two, and to refrain from stimulants. The local discomfort of the breasts will be relieved by gentle

rubbing with olive oil, and an occasional mild aperient of compound liquorice powder, or some effervescing saline, will assist in reducing the breasts to their normal condition.

Cautions.—In view of the proneness to inflammatory uterine affections after miscarriage, it is important that symptoms pointing to disease of the womb should not be treated with neglect, even although they may not be very troublesome. Aching of the back after exertion, the occasional or constant presence of vaginal discharge, whether white, yellow, or watery in character, exceptional pain, or excessive discharge during the menstrual periods, are symptoms which would suggest the propriety of medical advice and treatment.

In the event of a succeeding pregnancy, it is well to bear in mind the tendency mentioned at the commencement of the chapter to miscarry at the period of gestation at which in the previous pregnancy abortion occurred, and at that time to be specially careful and prudent, so as to obviate as far as possible the risk of a similar disaster.

CHAPTER VI.

PREMATURE CONFINEMENT.

DEFINITION—CAUSES—RECOGNITION OF CAUSE—COURSE OF PREMATURE CONFINEMENT—IMPORTANCE OF PREVENTION—EFFECTS OF PREMATURE BIRTH ON CHILD—AND ON MOTHER—NECESSITY OF CARE IN LATER MONTHS OF PREGNANCY—SIGNS OF IMPENDING CONFINEMENT—RECURRING ATTACKS OF PAIN—DISTINCTION FROM COLIC—PRECAUTIONS NECESSARY.

Premature Confinement is the term generally employed to characterise child-birth occurring after six months of pregnancy have elapsed, and before the full period of nine months' gestation has been attained. It is generally presumed that after pregnancy has progressed for six months in a normal manner, the infant is not unlikely to live, even when born prematurely; in technical language, the infant, after six months' gestation, is considered "viable." There is, however, no rigid distinction of time of gestation, on one side of which it can be strictly affirmed that the infant must be born dead or die shortly after birth. Children have undoubtedly lived who have been born as early as the end of the fifth month of pregnancy. On the other hand, a considerable

proportion of infants born in the seventh month of pregnancy live only for a few hours, not apparently being strong enough to undertake prematurely the burden of a separate existence. The distinction between "miscarriage" and "premature confinement," and between "non-viability" and "viability" of the infant, is purely a conventional one; but it is convenient in the opportunity it affords of indicating considerable differences of character in the premature termination of pregnancy, according as it occurs in the earlier or the later stages of gestation.

The Causes of Premature Confinement, like those of miscarriage, may be referable either to the mother or to the infant. Weakened health in the mother may result in the premature birth of the infant. The various causes which have been enumerated in the chapter on Miscarriage may act similarly in the later stages of pregnancy. Some women, for no very apparent reason, seem never able to progress beyond the seventh or eighth month of pregnancy, and each successive pregnancy is found to terminate prematurely at the same period of gestation. Sometimes excessive distension of the womb from exceptional amount of fluid surrounding the infant seems to induce premature confinement; and twin pregnancies are apt to terminate prematurely, probably for the same reason. Accidental discharge of blood in the interior of the womb is an occasional cause.

Relative to the infant, the same remarks apply which were made in the chapter on Miscarriage. In the later period of pregnancy, it is usually much more easy to specify the cause of premature confinement than in the earlier months. The fact that the infant is alive within the womb can be ascertained by the presence of movements and confirmed by other signs; and the absence of such indications for more than a few days would excite suspicions of its death. It is not judicious, however, for a pregnant woman to assume at once from the cessation of movements that the infant's life is endangered or lost. It is not uncommon to be unconscious of movements for some days, probably because the movements are less violent than usual, although they may not have ceased altogether. Even an educated medical man will often hesitate to decide, without repeated examination, that the life of the infant is irrevocably lost; and the only safe rule of conduct is always to assume that the infant is alive until very distinct evidence of its death is obtained.

The Course of a Premature Confinement resembles very closely that of a confinement at the normal period of nine months' gestation; and as it will be described fully in the chapter on Normal Confinement, only the earlier indications and the means to be

adopted to arrest, if possible, the premature termination of the pregnancy will be related here.

It is desirable to realize *the importance of using every endeavour to prevent the premature expulsion of the child*, and to prolong the pregnancy to its full term, when there is no sufficient reason for believing that the infant has ceased to live. There is always some degree of weakness and want of vitality observable in an infant born before the completion of nine months of pregnancy. In proportion to the prematurity of its birth, it is small and thin; its movements are feeble, and its cry is weak and moaning, in place of being strong and lusty. Its breathing is shallow and feeble, and its power of feeding itself by suction somewhat limited. Infants born prematurely are exceedingly susceptible to cold; their hands and feet become livid if at all exposed, and they shiver unless carefully protected by very warm clothing or cotton wool wrappings. It is found that they do not progress with the same rapidity as infants born at full time. They do not gain weight at the same rate as infants more fortunate in their birth, neither do they develop in other respects so satisfactorily. They are late in getting teeth and in walking; and their mental faculties occasionally mature very slowly. They are also more prone to the disease of rickets, and if they have any hereditary tendency to scrofula, it manifests itself early, and frequently severely. Very often the whole of their later life is characterised by some degree of delicacy, which is often found associated with a stature and physical development considerably below the average.

While the infant born prematurely suffers thus on the one hand from its own imperfections, it not unfrequently is placed in a disadvantageous position also by the inability of the mother to afford it adequate nourishment. The maternal breasts have not attained their full maturity, and both the quantity and the quality of the milk secreted by them are apt to be defective; and these defects, superadded to the difficulty which the prematurely born infant encounters in sucking properly, render the early nutrition of such infants a matter calling for care, and not unfrequently exciting anxiety.

These considerations emphasise the propriety of exercising due care, and some degree, perhaps, of self-denial, in the later months of pregnancy. Over-fatigue should be especially avoided, while exercise, so far as possible, should be taken regularly; reasonable discretion in diet should be exercised, and excesses of all kinds strictly avoided. The temptation to tight lacing, in order to conceal alterations of figure, must be strenuously resisted, as pressure of any kind is apt to induce labour. A reasonable arrangement

of loose clothing will generally effect this purpose quite satisfactorily, and prevent the alteration of figure being conspicuous or noticeable.

The slightest appearance of any *discharge of blood from the vagina* calls imperatively for absolute rest, and indicates the propriety of medical advice. Unlike the more early miscarriages, premature confinements very seldom commence with any discharge of blood. The first indication that confinement is commencing is generally the presence of *recurring attacks of pain* resembling colic, and usually felt in the abdomen just where the spasms of colic are generally situated. Occasionally they are referred more to the back ; but as a rule there is nothing in the character of the pain to distinguish it from that produced by colic. Some distinction between the two is found in the more regular recurrence of the spasms of pain in labour than in colic. The spasms in colic recur at irregular intervals, and successive attacks are often experienced at different parts of the abdomen ; while the recurrent pains of labour usually come in regular rhythm, and generally are felt in the same part of the abdomen. Colic pains are frequently accompanied by some diarrhœa, and when that occurs it is of some value in indicating the true character of the spasms. The most marked point of distinction is found in the fact that, during the spasmodic pain of labour, the whole of the womb felt through the abdominal walls is found to become firmer and harder ; and the firmness and hardness diminish and disappear as the pain passes off, recurring again when the pain again returns. This increased firmness and hardness is easily detected by any one laying the palms of the hands flatly on the walls of the abdomen during the spasm of pain. When recurrent pains of this description are experienced by a pregnant woman one or two months before the full time of pregnancy has elapsed, she ought to remain at rest on a sofa or bed, and send for her medical attendant. If he is able to satisfy himself that the infant is living, and that premature confinement is threatened, there are various drugs within his knowledge which are often effective in removing the pain, and arresting the premature action of the womb ; and the present care and self-denial of the mother are in due time rewarded by the birth of a strong child at the end of the full period of healthy pregnancy.

CHAPTER VII.

PREPARATIONS FOR CONFINEMENT.

SELECTION OF DOCTOR AND NURSE—ARRANGEMENTS REGARDING FEES—
ADVANTAGES OF PERSONAL INTERVIEW WITH MONTHLY NURSE—
SELECTION OF ROOM—DRAINAGE OF HOUSE—ACCOMMODATION OF
NURSE—FURNITURE OF ROOM—BED-PAN—BED-BATH—HIGGINSON'S
SYRINGE—DOUCHE—SPONGES—SANITARY TOWELS—BINDERS—
ANTISEPTIC FLUIDS—CARBOLISED VASELINE—BABY'S BATH—SOAP
—BABY'S DIAPERS—BASSINETTE—BABY'S BASKET—ITS CONTENTS—
WATER-PROOF SHEETING—ARRANGEMENT OF BED—ATTENTION TO
REGULAR ACTION OF BOWELS.

When the existence of pregnancy has become apparent, and the probable date of its termination estimated within reasonable limits, it is desirable to make certain arrangements so that the process of confinement may be passed through in safety and comfort, and that the result may be satisfactory as regards both the complete recovery of the mother and the well-being of the infant. To this end it is usual in England to engage beforehand the services of a *medical attendant* and of a *monthly nurse*. Not unfrequently in early married life attendance during confinement will be the first service the wife requires of a doctor; and, if her new home is far removed from the old, she will be called upon to exercise a choice as regards her medical attendant. To some extent the selection may be limited by local conditions, or by her capacity to meet the different scales of fees charged by different medical men. She will find her various friends not backward in describing the merits and demerits of their own medical advisers, and may find considerable difficulty in coming to a decision amidst a multitude of councillors. The best principle to go upon is to select the medical man in whom she feels she can place most confidence. The relations between patient and doctor are close and frequently confidential, and the man whom she can trust as honest and straightforward is the one whose attendance she will find most satisfactory. For the ordinary troubles of life one does not require a medical man of preternatural cleverness, whereas one does want a doctor who can be relied on to do his very utmost for his patient, and who can be trusted to act always in an honest and honourable manner in the various and sometimes intricate relations in which he may be placed towards his patient and her friends. Personal predilection

will decide whether the doctor should be young, or old, or middle-aged ; but it may be remarked that it is a mistake to suppose that all young medical men are rash and thoughtless, or that all old ones are stupid and "behind the age." Having provisionally selected a medical man, patients who are not in such a position as to be independent of pecuniary considerations ought to ascertain from him his scale of fees. Medical fees vary very much in different localities, and among different doctors ; and it is very much better to understand correctly at the commencement of the relationship of doctor and patient the terms upon which it is to be conducted. The doctor tacitly covenants to give the best consideration and skill in his power to further the welfare and interests of his patient, in consideration of the patient paying him with reasonable punctuality the fees which he is accustomed to receive for such services ; and the patient by sending for him virtually agrees to pay such fees. It is, therefore, perfectly just and reasonable that she should know beforehand what the usual fees of her medical attendant are ; and she should have no hesitation in asking the question. If the doctor's scale of fees is higher than she can afford, it is wise and judicious to say so, thus giving the doctor the option of lowering his fees, or of declining to attend. Medical practices vary so much in character that it is impossible to give any very definite information in the matter of fees. The majority of general practitioners of medicine have what are called mixed practices, which means that their patients vary greatly in social position, and that the scale of their fees is proportioned to the financial condition of the patient. A considerable number of doctors, however, have what are known as select practices, and decline to attend any patient who is not in a position to pay the fees which they make their minimum charge. Fair-minded people will recognize that a medical man has just the same right to select his patients as the patient has to select a doctor, and will not feel aggrieved if the conditions under which a doctor is willing to give his services are not quite compatible with their own financial resources. Having selected a medical man, and ascertained his usual scale of fees, it is well to consult him about the date at which confinement may be anticipated and to ask him for any advice he may wish to give as to any preparations for that event.

The Nurse.—It will generally be found desirable to take the recommendation of the doctor as to a monthly nurse. The comfort of the patient during the period occupied in recovery from confinement will be materially increased by harmonious interaction between the doctor and nurse ; and medical men naturally recommend nurses whom they know

to be both efficient in their duties and pleasant and accommodating in their manners. It is undoubtedly to the doctor's as well as to the patient's interest that the nurse should be both able and trustworthy, and his capacity and opportunity of judging of a nurse's qualifications are naturally greater than those of the patients who may have previously employed her. Good monthly nurses usually expect to be engaged some months previous to the probable date of confinement; such nurses, when popular, not unfrequently have engagements for six or seven months in advance. It is customary to arrange with them a fee which covers attendance during four weeks from the date of confinement; and a reasonable degree of elasticity as regards the date is always understood as necessarily involved in such an arrangement. The fees of monthly nurses vary quite as much as those of medical men, and should be made a subject of distinct arrangement. Generally, it is understood that the monthly nurse will not be summoned until the commencement of the confinement; but many women may prefer to have their monthly nurse in their house for a week or two before the date of expected confinement, so that she may be on the spot when required. When an arrangement of this kind is made, the nurse usually receives some fee for the time she is waiting in the house previous to the confinement, this fee being at a somewhat lower rate usually than the fee for the month following the confinement. Sometimes the patient may prefer that the nurse should remain with her more than four weeks, and then also it is usual for the scale of payment to the monthly nurse to be somewhat lower after the expiry of the four weeks following confinement. All such arrangements should be definitely made, when possible, at a personal interview with the nurse on engaging her; and, where a personal interview is impossible or inconvenient, a distinct understanding should be arrived at by letter.

In all cases, when possible, the expectant mother should have an early interview with the nurse who is to attend her and care for her during her confinement. The nurse can assist her much in suggestions by which the period may be passed in comfort and happiness; and, as every nurse has her own special methods of work and her own particular requirements and conveniences, the relation between patient and nurse will be more harmonious if some little attention is given to these peculiarities. Like medical men and other people in this world, nurses vary in age, ability, and temperament. Not so many years ago, it was an article of faith that no woman was capable of acting as a monthly nurse unless she was at least verging upon old age, and had herself been the mother of children. Matters are now quite changed in this

respect, and many of the best monthly nurses are quite young, and frequently unmarried.

Choice of Bedroom.—When the accommodation of the house affords a choice of bedrooms to be occupied during confinement, it is desirable to select the largest available room; and one which enjoys much sunshine is preferable to one with a northerly aspect. The room is to be occupied for the greater part of a month by at least three persons,—the mother, the infant, and the nurse; and it is conducive both to the recovery of the mother and the health of the child that the room should be both well ventilated and purified by sunshine. If the confinement is to take place in summer, dark blinds may be desirable for the purpose of coolness and of shade during the hottest and brightest part of the day. External sun-blinds are very useful for this purpose, and are valuable also in assisting in ventilation while controlling draughts.

The cleaning and sweeping of a room is always a trying operation to an invalid confined to bed, and arrangements should be made to obviate these proceedings as far as possible. Polished wooden floors, with mats or strips of carpet which can be easily removed and dusted, are much preferable in bedrooms to floors entirely covered with carpet; and their convenience is specially noticeable in cases where the bedroom is occupied all day as well as at night. In winter, the heating of a bedroom occupied during the day should be by an open grate. Gas fires, which are very convenient for occasional use, are ineligible in a room constantly occupied, as they injure somewhat the atmosphere of the room, and do not aid ventilation so efficiently as an open fire.

It is exceedingly important that the **drainage** of a house in which any one is to be confined should be in a thoroughly satisfactory condition; and in all cases where there is any doubt about the efficacy of the sanitary arrangements, a competent surveyor should be employed to report on it. In many districts the services of such a surveyor can be obtained gratuitously from the Local Sanitary Authority; and where the Sanitary Authority does not provide an inspector, a competent surveyor can usually be obtained to report for a comparatively small fee. No money can be better spent, for a sanitary condition of the house is decidedly the most important element in insuring a satisfactory and unimpeded recovery from confinement, while an insanitary condition is often the cause of months of illness after confinement.

For the *accommodation of the nurse*, it is very convenient, where possible, to have a small room either opening off or adjacent to the bedroom of the mother. The nurse has various duties to perform to the mother and child which are most conveniently

carried out in a room apart from the bedroom ; and by the use of a small room for these purposes is able to maintain the bedroom always in a tidy and neat condition. Such a room can also be utilized by the nurse for her meals, when they are taken apart from her patient.

The bedroom in which confinement is to take place should not be inconveniently filled with furniture. Furniture occupies space which otherwise is occupied by air useful for ventilating purposes ; and it is impossible to be too careful in the thorough ventilation of the lying-in chamber. Among the essential articles of furniture may be mentioned a double bed with mattresses which are not too soft ; a comfortable night-stool or chair for use during convalescence, and a convenient toilet-table with drawers to hold necessary articles. Some of the articles to be mentioned are requisite for the comfort and convenience of the mother, while others are devoted to the use of the nurse, or the wants of the infant.

Requisites for the Mother.—Of the articles desirable for the mother one of the most important is a comfortable *bed-pan*. For some days after confinement, the patient is not usually allowed to leave bed for any purpose, and the use of a bed-pan becomes necessary. Bed-pans are made of stoneware or metal, and are of various shapes. The most convenient kind is the slipper shape (fig. 6) made in white stoneware, or a modification of this known as the Anatomical Bed-pan. For

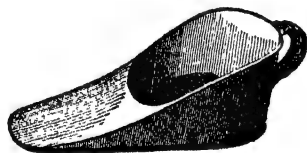


FIG. 6.—Bed-pan Slipper.

comfort in use, it is usual to make for the bed-pan one or two removable flannel covers, which can be taken off and washed when necessary. All bed-pans should be fitted with lids.

Another appliance very desirable and useful is an invalid *bed-bath*, an illustration of which is appended (fig. 7). Its use obviates the fatigue which often follows the attention of the nurse to perfect cleanliness, and enables her to perform her duties thoroughly without any risk of rendering the bed damp or uncomfortable. The best bed-baths are made of japanned tin, and are filled at the lower end with a waste-pipe and tap attached to an india-rubber tube, the other end of which is carried to a receptacle on the floor. By leaving the tap of the waste-pipe open, any quantity of water can be used for washing or douching without any risk of the bed-bath overflowing, the overflow being carried away by the waste-pipe into the larger vessel on the floor.

In addition to ordinary washing after confinement, many doctors are in the habit of prescribing daily douching of the vagina by the nurse with some antiseptic fluid; and for this purpose either

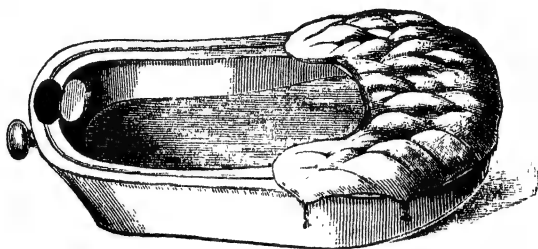


FIG. 7.—Bed-bath. (Arnold & Sons.)

a *Higginson's syringe*, such as is described at p. 23, or a *douche* of the kind pictured in the illustration, is necessary. The douche is the more convenient of the two for the purpose indicated. It consists of a glass or tin vessel, of capacity sufficient to hold at least a quart, to the lower end of which is attached a flexible india-rubber tube of about six feet in length, terminating in a gum-elastic or glass perforated nozzle, such as is used with Higginson's syringe, with a stop-cock about six inches from the end. A nail or hook upon which it can be hung when in use should be fastened to the wall, about three feet above the left side of the head of the bed. The advantage the douche possesses over the syringe is, that when the vessel has been filled with water or antiseptic lotion and suspended on the hook, the fluid runs through the tube, and, when the stop-cock is opened, out of the nozzle, without any action on the part of the nurse, who has thus both her hands free for other purposes; while in the use of the syringe one hand is occupied with propelling the fluid by pressure, and only one hand is left available for other services.



FIG. 8.—Douche.

One or two *sponges* are necessary for use in the ablu-
tion of the mother and the baby. The same sponge should not be used for both; and when ordinary sponges are employed, great care must be taken that they are absolutely clean. A satisfactory method of insuring their freedom from possibly contaminating germs is to leave them lying in a solution of carbolic acid, composed of one

part of carbolic acid to twenty parts of water, for twenty-four hours, after they have been thoroughly washed out in warm water. Much preferable to ordinary sponges for the mother are the *artificial sponges* now made, of absorbent cotton wool enclosed in antiseptic gauze. Each sponge of this kind is only to be used once and then destroyed; but as their cost is very little, their use is not expensive, and all risk of septic poisoning from a dirty sponge is avoided.

For the absorption of the discharge which comes from the vagina for some time after confinement, most women use ordinary diapers; and if these are thoroughly clean, and of soft material, they answer the purpose very well. More comfortable and convenient are the *sanitary towels*, or absorbent wool diapers, made on the same principle as the artificial sponges described above. These, like the sponges, are now sold by the dozen at a very low price, and their use not only adds to the safety and comfort of the patient, but also obviates the necessity of much washing of diapers.

After confinement, it is usual for the mother to be bound round the abdomen for two or three weeks with a broad *binder*, which affords support to the abdominal muscles weakened by the distension of the previous months of pregnancy. The two qualities required in a binder are firmness and softness. The best material for them is somewhat stiff towelling; and they should be made long enough to just meet round the abdomen before confinement, so that the ends may overlap after confinement, and broad enough to extend from below the hip to an inch or two above the lowest rib. Belts fitted with buckles, to be used in place of the ordinary binder, are sold by surgical instrument makers; but these have no advantages over the binder as just described. The binder, when adjusted after confinement, is secured by strong *safety pins*, a supply of which should be kept beside the binder. Three or four binders are necessary, as they may become soiled and require to be washed.

The use of **antiseptic fluids** for bathing and douching after confinement is now almost universal. Medical men differ in their preference for particular antiseptics, and it is well for the expectant mother to ask her medical attendant which antiseptic he recommends. Those most commonly used are Condyl's fluid, carbolic acid, "Sanitas" fluid, and "Jeyes' Disinfectant." These are all good and reliable for the purpose for which they are intended; and any of them may be employed without risk when diluted to the extent of one part of the fluid to forty parts of water.

A *feeding-cup*, a small pot of *carbolic vaseline*, some scent, and ordinary toilet requisites will complete our list so far as the wants of the mother are concerned.

Requisites for the Infant.—For the expected baby, some preparation also falls to be made. For convenience in washing the baby, it is not uncommon to have a special baby's bath, about the size of an ordinary foot-bath, but much more shallow, which is fitted into a stand about a foot high, from which it can be removed to be emptied and cleaned. Such a bath is not absolutely necessary, as an ordinary foot-bath, or even a large basin, is sufficient for the purpose; but its possession conduces to the comfort of the nurse, and avoids the risk of any injury to the baby, such as may happen from contact with the sides when a foot-bath is employed.

Any kind of good *soap* may be employed for washing the baby. Among those usually preferred may be mentioned Wright's Coal Tar Soap, Pears' Soap, Cleaver's Terebene Soap, and "Vinolia" Soap. The last mentioned is a particularly soft and pleasant soap for delicate skins.

For drying the baby after it has been washed, the softest Turkish towels should be used; and after thorough drying, the baby is powdered with some soft powder, such as fuller's earth, starch powder, or so-called violet powder. A very pleasantly scented and soft powder useful for this purpose has lately been introduced under the name of "Vinolia" Powder.

It is unnecessary here to enter into the question of the baby's clothing; something will be said later on the matter; but the importance of softness and dryness in the *diapers* for the use of the baby require that mention should be made of the best material for their construction. This is undoubtedly soft Turkish towel-lin. This material is soft, absorbent, easily washed, and retains its softness even after frequent washing; and is much to be preferred in every way to linen, cotton, or calico. Lately, diapers of absorbent cotton wool have been introduced for the use of babies, but they are ineligible on account of their excessive warmth. India-rubber waterproof sheeting should never be used as an outside covering to diapers. Its use simply affords an excuse for the nurse not changing the diapers as often as necessary, and interferes with the healthy action of the child's skin, not unfrequently setting up acute irritation of the legs and lower part of the abdomen.

It is convenient to have the *bassinette* or *cradle*, which is prepared for the baby, of such a size and shape as to be easily portable. When the mother has so far recovered as to be able to move from one room to another, it is convenient to have both baby and bassinette in the room to which she may have removed; and a heavy and cumbrous bassinette is difficult and awkward to carry. Babies also undoubtedly rest with more comfort

in a small than in a large bassinette, as it is more easy in a small one to give them the support they desire, and to maintain their warmth. When a baby is lying down, it is often uncomfortable unless supported on either side by small pillows or blankets; and when the bassinette is too wide it is difficult to give this support. Rocking-cradles are scarcely ever employed now; and the propriety of swinging or rocking babies to sleep is questionable, probably interfering to some extent with healthy digestion. There is no objection to the use of curtains to a bassinette, except in so far as they diminish its portability; and besides adding to its appearance, they are useful in screening light and preventing draughts. It is usual to place the various articles required for the baby's toilet in an open basket, so that they be immediately available when wanted. The contents of the basket will include needles and thread, scissors, safety and other pins, some tape, a skein of strong cotton thread, flannel and other rollers, some flannel for washing baby, a little old linen, a small hair-brush, a powder-box with small puff, and a pot of carbolised vaseline.

Preparation of the Bed.—For the purpose of protecting the bed from being soiled during confinement, some *waterproof sheeting* is desirable. It is best to have two pieces of sheeting—one large enough to cover almost the whole of the bed, measuring about six feet by five feet; the other not quite so large, about four feet by three feet. At the commencement of the confinement the bed is arranged in the following manner. The large waterproof sheet is spread above the mattress, and covered with a blanket, over which the under sheet is placed. Upon this the smaller waterproof sheet is laid in such a way that one end hangs a little over the left side of the bed, while the other end extends rather beyond the middle line, the sides of the sheet being equidistant from the top and bottom of the bed. This smaller sheet is then covered with a folded blanket, and over this is laid a sheet folded lengthways, so as to be about three feet wide. One end of this "draw-sheet," as it is called, hangs over the left side of the bed, covering the waterproof sheet; the other end is rolled up so as to lie in the middle line of the bed, near the further end of the waterproof sheet beneath it. The object gained by this arrangement is that both the bed and the patient can be kept thoroughly dry. The larger waterproof sheet protects the bed completely from any risk of becoming damp; and the draw-sheet over the smaller waterproof sheet can be pulled through gradually from right to left, so that, when the left side becomes soiled, it may be folded, and the unused part rolled up in the middle of the bed brought into use. When the confinement is completed, the draw-sheet, with the

folded blanket underneath and the smaller waterproof sheet, can be removed without any trouble or fatigue to the mother, and a perfectly comfortable and dry bed is presented at once. Draw-sheets made of absorbent cotton-wool enclosed in antiseptic gauze have lately been introduced, and are both economical and comfortable. After use they are destroyed by burning.

Precaution.—As the time of confinement approaches, it is very important for the expectant mother to give attention to the regular and daily action of the bowels. This may be secured by the use of compound liquorice powder, or of any other of the aperients mentioned previously. It is not necessary or desirable to take the rather nauseous popular medicine, castor oil, habitually towards the end of gestation; but in first confinements, when the process of parturition has actually commenced, a small tablespoonful of castor oil may be taken with advantage, and is useful both in promoting the progress of the confinement, and in diminishing the severity of the pains.

CHAPTER VIII.

CONFINEMENT.

DEFINITION—INDICATIONS OF COMMENCEMENT—PAINFUL CONTRACTIONS OF WOMB—FREQUENCY—DISTINCTION FROM “FALSE PAINS”—THE SHOW—DEMEANOUR DURING FIRST STAGE—PROPRIETY OF LAXATIVE MEDICINE—FOOD—TRANSITION FROM “FIRST STAGE” TO “SECOND STAGE”—DESCRIPTION OF CONTENTS OF WOMB—AND OF ACTION DURING LABOUR—BURSTING OF THE WATERS—SECOND STAGE—DIFFERING CHARACTER OF PAINS—POSITION OF MOTHER—TERMINATION OF SECOND STAGE—POSITION OF CHILD—MANAGEMENT IN ABSENCE OF SKILLED ASSISTANCE—THIRD STAGE—GENERAL REMARKS.

The term *confinement* apparently was originally employed to represent the whole period during which a mother was withdrawn from her usual occupations by the act of giving birth to a child; but it is now used in the more limited sense as a synonym for the actual process of parturition. This process is generally reckoned as commencing at the time that the first painful contractions of the womb are experienced, and as finishing when the fleshy body

known as the "after-birth" has come away with its attached membranes, which generally immediately follows the birth of the child. As a matter of fact, however, the process of parturition often commences considerably before any painful contractions or, as they are generally called, "uterine pains" are felt. The initial contractions of the womb at the commencement of confinement are not unfrequently painless, more especially in women who have already had one or two children; and even in first confinements the early efforts of the womb to expel its contents may be accompanied with so little discomfort that quiet sleep is not interfered with.

The *painful contractions* of the womb, which first indicate to the expectant mother the near approach of the termination of her pregnancy, resemble very closely the spasms of ordinary colic. They are of short duration, lasting usually from a quarter to half a minute; and the intervals between them often extend to half an hour, or even to an hour. Sometimes they are felt in the back, but more commonly in the front of the abdomen; and each painful contraction generally returns in the same part of the abdomen as the previous one, a distinction being afforded in this respect from the pains of colic, which are apt to be felt at different points in the interior of the abdomen.

True uterine contractions have also to be distinguished from what are known as *false pains*, which occasionally give some annoyance for one or two weeks before confinement occurs. These "false pains" are actually contractions of a spasmodic character of a small part of the womb, of a character analogous to the cramp which affects sometimes so painfully the muscles of the calf of the leg. Just as in cramp of the leg, the part of the muscle contracted is too small to produce any movement of the feet, so the irregular spasmodic action of the part of the womb contracted by a false pain is too small to produce any effect with reference to the birth of the child; and the contraction is thus a useless and "false" one. There are three tests available to the invalid to enable her to distinguish true uterine contractions from colic and from "false pains."

1. The first is the coincidence with the pain of the general hardening and increase of firmness of the womb felt through the walls of the abdomen, as described in the previous chapter (p. 47). This can generally be made out distinctly when the invalid lies on her back during the occurrence of the pain.

2. The second test is the appearance of a discharge from the vagina tinged with blood, which is known as a "*show*." With some women this appears early, with others late, and with others

not at all ; but when it does appear it is positive evidence of the actual commencement of the process of parturition.

3. The third test is found in the effect of a moderate dose of castor oil. The pains of colic are generally alleviated, and false pains usually cease altogether for some time after the action of the oil ; whereas the true uterine contractions of parturition are generally aided and increased by its operation.

Additional probability to the true contractile character of the pains is given by the regularity of the intervals between them, by the gradual shortening of these intervals, and by the progressive increase in the intensity and duration of the pain. In a first confinement, these uterine contractions may progress for many hours without being sufficiently severe to prevent the patient from moving about the house ; and as a rule she will feel more comfortable, and the confinement will progress more satisfactorily, if she continues walking about a room or sitting in a chair, rather than lying in bed. If the bowels have not been acted on freely within six hours before the commencement of the pains, it is most desirable that action should be obtained at this stage of the confinement, either by a dose of castor oil, or preferably by the aid of a large enema of warm water. Nothing conduces more to increase the rapidity, as well as to diminish the discomfort of confinement, than a thoroughly empty condition of the lower bowel ; and this is best effected by a large enema of warm water given slowly soon after the commencement of the labour.

Food may be taken as usual during the progress of this stage of confinement ; but no stimulants of any kind should be taken from the commencement unless by the direct order of the medical attendant. Not unfrequently the inclination for food is diminished by the presence of sickness, and when that is present it is best to take only simple fluids such as beef-tea, Brand's Essence, Liebig's Extract, or milk with soda-water. Sickness, although unpleasant, is not at all injurious in the early period of confinement ; indeed, in many cases it facilitates the progress of the parturition by relaxing resisting tissues ; and formerly it was not unusual to administer emetics such as ipecacuanha and antimony for this purpose.

After a period of time varying very much with different women, and in different confinements, the pains are generally observed to change somewhat in character, and from being spasmodic and griping they become forcing and down-bearing. This change is coincident with progress from what medical men call the *first stage* to the *second stage* of parturition. Just before confinement commences, the womb exists in the form of a large oval bag, with

a very narrow and small neck at its lower end. The interior of this bag is lined with what are known as the "membranes," and these enclose the watery fluid in which the infant floats. The sole connection of the infant with the mother, independently of the fluid surrounding it, is the umbilical cord, which proceeds from the navel of the infant to some part of the wall of the womb, where it is attached to the after-birth or placenta, as it is called. The *placenta* is a flattened and fleshy cake lying between the membranes and the interior of the womb at some part of its inner surface, and at this period of gestation is so loosely attached to the womb as to separate easily from it after the infant is born. During the *first stage of labour*, the womb, by its successive contractions, is forcing part of the membranous bag with its inclosed fluid into, and partly through, the small and narrow neck of the womb, and the neck is thus dilated to admit of the subsequent passage of the infant. This stage is said to be completed when the neck and mouth of the womb have been dilated to their full extent so as to afford a continuous passage with the vagina for the birth of the child. At the end of the first stage usually, but sometimes earlier, sometimes later, the membranes generally tear, and the greater part of the enclosed fluid is discharged from the vagina. This discharge is generally described by nurses as the *bursting of the waters*, and is often, although not quite accurately, regarded as an indication of the commencement of the "second stage." It is always an indication that some progress in labour has been made; but it is not at all uncommon for the membranes to tear some time before the neck of the womb has been fully dilated, and thus some time before the "first stage" has been technically completed. The amount of fluid which escapes varies extremely, depending both upon the amount actually contained in the womb, and upon the proportion which is allowed to escape under differing conditions of the neck of the womb, and of the position of the child within the womb. In a few exceptional cases it may amount to some gallons, flooding the bed, and even the floor of the room; in the majority of cases, one or two pints may be discharged either at once, or at short intervals of time. If the "bursting of the waters" does not occur till towards the end of the first stage, the patient will probably be in bed; and the uncertainty about the amount affords a strong reason for thorough protection of the bed by waterproof sheeting.

When the *second stage* has been reached, the contractile pains are usually of a distinctly more forcing and down-bearing character. They recur usually with great regularity, the length of interval between them varying much in different confinements. As a rule,

the intervals are from three to ten minutes, generally becoming rather shorter as the confinement approaches its termination. During this stage, which may last for several hours, more especially in first confinements, but which is occasionally passed through in a few minutes, the patient will generally be most comfortable lying in bed; and as she herself is not aware of the rapidity of progress, it is unsafe to get up without the doctor's permission, as the birth of the child may take place suddenly, and injury may follow if the mother is out of bed.

The second stage of labour terminates with the birth of the child. Most usually, the head of the child emerges first, and is followed by the body and legs; but in some cases the feet come first, or the breech of the child; and in these instances the head comes last. When first born, the infant still remains attached to the mother by the cord which proceeds from the navel of the child to its attachment to the after-birth adhering to the interior wall of the womb. Immediately the child is born, the doctor or nurse sees that its breathing is not impeded in any way by its mouth being covered with blankets, or immersed in any discharge; and proceeds to separate it from the mother by tying the cord with thread in two places about an inch apart, and two or three inches distant from the child, and cutting it through with scissors between the two threads.

In cases where a child has been born hurriedly, and neither nurse nor doctor is present to afford assistance, the mother should lie quite quietly with the infant in front of her, simply taking care that its breathing is not impeded in any way. No injury whatever results to the child from remaining attached to the mother by the umbilical cord for some time after birth; and if it is allowed to breathe freely and is kept warm, it may remain in perfect safety until assistance arrives.

What is known as the *third stage* of labour consists of the expulsion from the womb and vagina of the placenta, or after-birth, and the attached membranes which previously lined the interior of the womb. After the birth of the child, the womb contracts very much in size; and this contraction loosens the attachment of the after-birth to the interior wall of the womb. A few intermittent contractile pains follow, and after a short period, varying usually from five to twenty minutes, the after-birth is pushed out, carrying with it the membranes, and the labour is thus completed.

The contractile pains which expel the after-birth are generally of a very mild character, and not irksome to the mother; and after the expulsion has been effected, there is generally complete freedom from pain, and a delightful sense of comfortable rest.

Occasionally, there is some delay in the expulsion of the after-birth, and some little assistance may have to be given by the doctor in attendance; but that is not a matter which will materially affect the patient's comfort.

The expulsion of the after-birth is generally accompanied by some discharge of blood, which, however, usually ceases almost immediately; to be followed soon by the discharge which continues for the first two or three weeks of convalescence. To receive this a sanitary towel or diaper is usually adjusted immediately after the confinement is completed; and when the draw-sheet and upper waterproof sheet have been removed, a binder is pinned carefully round the abdomen of the patient, and she is at liberty to rest and sleep. If the discharge is excessive in quantity, it is convenient to replace the draw-sheet, but this is not usually necessary.

It is desirable and convenient to point out here that **parturition** is a **perfectly natural process**, for which the mother has been undergoing preparation during the whole of the previous pregnancy. Various alterations have been taking place during that period both in the joints of the pelvis and in the tissues of related parts, so as to admit of the passage of the child when the period of gestation has been completed; and these temporary changes in the majority of cases fulfil their object so satisfactorily, that the duty of the medical man is limited to ministering to the comfort of the mother, and guarding the safety of the child. The amount of pain experienced by the mother varies very much; in all cases a certain amount of pain has to be borne; but since the introduction by Sir James Y. Simpson of anæsthesia by chloroform in midwifery, the pain can always be kept within reasonable limits; and where necessary the mother can be made absolutely and completely unconscious. The propriety of using chloroform in particular cases, and the extent of anæsthesia demanded, must always be decided by the medical man in attendance; and a judicious patient will be guided by his advice. The tendency of the present day is probably towards excess in the use of chloroform during confinements, as, naturally, medical men are always anxious to reduce, as far as possible, the pain borne by their patients.

PART II.

Early Motherhood.

CHAPTER IX.

CONVALESCENCE FROM CONFINEMENT.

NORMAL PROGRESS AFTER CONFINEMENT—NECESSITY OF QUIETUDE—INJURIOUS EFFECTS OF EXCITEMENT—AFTER-PAINS—DIET AFTER CONFINEMENT—OCCASIONAL OCCURRENCE OF SICKNESS—APERIENTS—DISCHARGE—OCCASIONAL EXCESS OF DISCHARGE—MANAGEMENT—NECESSITY OF CLEANLINESS—METHODS OF DOUCHING AND SYRINGING—MAINTENANCE OF RECUMBENT POSITION—SUMMARY OF NORMAL PROGRESS—APPLICATION OF BINDER—ALTERATION OF FIGURE AFTER CONFINEMENT—DESQUAMATION OF SKIN—DEEPENING OF COLOUR OF HAIR—OCCASIONAL OCCURRENCE OF FEVERISHNESS—NECESSITY OF MEDICAL AID—SUSCEPTIBILITY TO INFECTION DURING CONVALESCENCE.

The Period of Convalescence after Confinement is usually a very pleasant one for the young mother. The trials and troubles of pregnancy are past, parturition has been successfully accomplished, and a new interest has been added to life in the possession of offspring which requires and calls for the loving care and attention of the mother. If still some little sacrifice of personal inclinations has to be made, and some minor discomforts borne with equanimity, the reward in the pleasure of fulfilling maternal duties is more than an equivalent, and daily the interest of such duties will be found to increase.

Usually, after the immediate attentions of the nurse have been rendered to the mother after childbirth as described in the previous chapter, a period of complete rest and delicious comfort ensues. Peaceful sleep is enjoyed, and for from twelve to twenty-four hours the less the patient is disturbed for any purpose, except for the necessary changes of diapers when the discharge is considerable,

and for the administration of nourishment, the better her progress will subsequently be. Occasionally, for the first few hours, there is a feeling of excitement and nervousness, sometimes accompanied by attacks of shivering; these discomforts will be found to be allayed completely by quietness and subdued light in the room, by warmth of covering, and by the administration of light warm food, such as gruel or beef tea.

Importance of Quiet.—Even in the absence of any discomfort or excitement, complete quietude is most essential for the satisfactory progress of the young mother. Slight influences have strong effects during the convalescence from confinement, and even the excitement of seeing one or two friends is not unfrequently followed by disturbing symptoms. A rule upon which many doctors act, and which, although perhaps apparently rather stringent, is exceedingly beneficial, is to permit of no visitors whatever, with the exception of one relative or intimate friend, once daily, during the whole of the first week after confinement.

Different women naturally differ very much in susceptibility to disturbance of this kind, and ill results from excitement are not so apt to follow second or later confinements; but with slight occasional relaxation, the observance of the rule will be found advantageous.

After-Pains.—After twelve or twenty-four hours have elapsed, young mothers are occasionally troubled to some extent with the periodic pains which are known as “after-pains.” These are slight rhythmical pains occurring at varied intervals, and resembling the pains which occur at the commencement of confinement. They are caused by spasmodic contractions of the now empty womb. The majority of primiparæ escape them altogether, but they are generally experienced to some extent by mothers who have had two or more children. After their commencement, they may continue at intervals for two or three days, and are usually complained of most during the night. Much can be done to relieve them, and the medical attendant will usually administer some medicine which will mitigate their severity, when they occur to such an extent as to seriously disturb the rest of the patient. The application of flannels wrung out of warm water, or of a warm india-rubber bottle to the lower part of the abdomen, often adds much to the comfort of the mother when after-pains are troublesome.

Diet after Confinement.—During the first twenty-four hours after confinement, the mother is usually restricted to a light fluid diet, consisting generally of bread and milk, gruel, bread and butter, tea, soups, and eggs beaten up with milk. Many medical

men prefer to continue this diet for the first three or four days after parturition ; others allow, after the first day, a little solid food in the form of white fish, poultry, or game. Unless called for by special reasons, stimulants are usually interdicted for at least the first three or four days after confinement ; after that period the question of stimulants falls to be decided by habit, temperament, and considerations relative to the nutrition of the infant.

In some mothers some degree of weakness of digestion exists for a few days after confinement, and even occasional attacks of sickness may be experienced. This is more apt to occur where the confinement has been prolonged, or where the mother has been under the influence of chloroform for some time during the parturition. In such cases considerable care in diet may be necessary for a few days. Milk in combination with soda-water is pleasant and useful when nausea is present ; when digestion is feeble, and accompanied by flatulence or pain, pre-digested foods such as Benger's or Mellin's Food made with milk, or employed to thicken well-made beef-tea or chicken-broth, will be found both nutritious and easy of assimilation.

In the absence of any counter indications, the young mother will usually be allowed after the first three or four days to return to her usual diet ; and any precautions or restrictions which may be imposed will be dictated rather with a view to the susceptibility of the nursing infant than to the health of the mother. The digestion of newly-born infants is very easily deranged, and imprudence in diet in the mother will frequently result in great pain to the child, producing disturbed sleep and violent fits of crying. Something will be said in the next chapter about diet in relation to the quality of milk secreted by the breasts.

Aperients after Confinement.—If the bowels have been acted freely immediately before confinement, there will not usually be any further action for one or two days afterwards ; and no discomfort will be experienced even if a period of three days elapse before action again takes place. If an aperient is then necessary to ensure action, it is usual to employ either castor oil, or compound liquorice powder, a small dose of either being given at night.

It is found that under such conditions a smaller dose than is usually required is efficacious ; generally one dessert-spoonful of castor oil or one heaped-up teaspoonful of compound liquorice powder will be quite sufficient to produce a good action of the bowels in the morning. In place of one of these drugs, an enema of warm water, or an injection of one or two teaspoonfuls of glycerine may be employed, and will generally be considered

more pleasant, and be found equally effective. The choice between giving a drug or an injection will sometimes depend on the condition of the breasts as regards tension when the secretion of milk is commencing. If the breasts are tense and full and uncomfortable, action of the bowels by castor oil or compound liquorice powder will be found to relieve them more than by enema or injection.

The amount of the discharge which flows from the womb after confinement varies very greatly in different women ; and it is a question for the doctor to decide whether in any given case it is excessive, and should be restrained. What would be excessive and injurious to one mother may be not only normal, but also salutary, to another ; and extreme variations, from those requiring one or two diapers daily to those requiring twelve or more, are observed without any apparent injury to health, or interference with convalescence. It is the duty of the nurse to watch carefully the character and amount of the discharge, and to report at once any abnormality to the doctor in attendance. For the first few days the discharge is usually of a character almost indistinguishable from blood, although a little more watery than normal blood. It has a characteristic, faint, but not unpleasant odour by which it can be recognised on a diaper as distinct from ordinary blood. After a few days it alters in appearance, becoming rather more watery, and changing from a red to a greenish hue ; after which it becomes white or watery, and ultimately disappears. Generally, it will have disappeared almost entirely by the end of the third week after confinement, but in some cases it may last for four or five weeks. If discharge of any kind lasts more than five or six weeks after confinement, it is an indication that some skilled care is necessary, and the attention of the medical attendant should be called to the matter.

Any appearance of *fœtor in the discharge* should always be reported by the nurse to the doctor. A normal discharge after confinement, if proper cleanliness is preserved, should never have a foetid or distinctly disagreeable smell. When marked fœtor exists, it is an indication of possible risk to the mother from septic contamination ; and to obviate this risk certain precautions will require to be taken under the direction of the medical attendant. Undoubtedly, fœtor does exist in a great many instances where no evil effects follow, but its existence should always be regarded as abnormal, and immediate attention given to improve the character of the discharge, and prevent any unpleasant results.

A very strong reason for the complete quiet which has been insisted upon as necessary during the first week after confinement

exists in the fact that even slight excitement is found frequently to increase to a serious extent the amount of discharge, and sometimes even to bring on alarming hæmorrhage. This seems especially to result from any sudden shock or fright, and great care should be taken by a nurse to avoid any risk of such an occurrence to her patient. When any alarming increase in the discharge is observed, the nurse should reassure the patient, lower her head by removing pillows so as to place it on a level with the body, and apply cloths wrung out of cold water to the lower part of the abdomen—never failing, at the same time, to send a message to the medical attendant.

Even after the discharge has become colourless, a return to its original colour may result from excitement or from over-exertion. When this is only temporary, and the quantity not much increased, importance is not to be attached to it; but if the return to a red-coloured discharge continue for more than a day, or if the quantity be much increased, the attention of the doctor should be called to its existence. It will very frequently be found that when the patient is first allowed to sit up in bed to meals, a slight deepening of colour is observed in the discharge; no importance need be attached to that occurrence, unless it persists on each successive assumption of the sitting-up position.

Douching.—It has been remarked that when proper cleanliness is preserved, the discharge from the vagina normally does not exhibit any fætor. It is almost needless to say that when a patient is in charge of an educated nurse, there ought never to be any doubt that proper cleanliness is preserved. That is the first duty of a nurse. In addition to ordinary ablutions, the mother should be sponged, at least twice daily, with some antiseptic fluid round the entrance of the vagina; and if the discharge is at all fætid the interior of the vagina should be syringed or douched twice a day with a similar fluid. It is in performing this duty that the nurse will find the bed-bath and the douche described at p. 53 useful and convenient. Any antiseptic fluid preferred by the doctor is to be employed. The smooth and padded end of the bed-bath is slipped underneath the hips of the patient as she lies on her back, and if there is a tube attached to the bath for the purpose of emptying it, this is carried to a receptacle underneath the bed. The can of the douche is then almost filled with water, at a temperature of about 100° F., and whatever antiseptic is preferred is added to, and mixed with, the water in measured quantity. If the douche holds a pint of water, one fluid ounce of Condyl's fluid, or of Jeyes' disinfectant, or of "Sanitas" fluid, would be a proper quantity to add; of carbolic acid, half that

amount would suffice. In a basin near at hand should be an equal quantity or more of warm water rendered similarly antiseptic, with a clean sponge in it, preferably an artificial one of absorbent cotton wool and gauze. The douche-can having been suspended from the hook fixed on the wall, the nozzle is washed in the basin of antiseptic fluid, rubbed over with carbolised vaseline, and introduced carefully well into the vagina. The stop-cock is then turned, and the fluid from the douche-can irrigates the vagina, and runs out into the bed-bath. After the douching is completed, the entrance of the vagina and surrounding parts are sponged with the fluid in the basin, and carefully dried with a warm, soft, clean towel, after which the bed-bath is removed.

When a Higginson's syringe is employed in place of the douche, it is convenient to use an open hot-water jug to hold the antiseptic fluid. This is placed close to the side of the bed on a chair or low table, and the weighted end of the syringe dropped into it. The nozzle of the syringe is then washed in antiseptic fluid, lubricated with carbolised vaseline, and introduced into the vagina, and is held there with one hand, while the dilated part of the syringe is alternately compressed and relaxed by the other hand. For the purpose of vaginal douching a gum-elastic nozzle perforated only at the sides should be used.

Position after Confinement.—For at least some days after confinement it is most important that the mother maintain continuously the *recumbent position*, not raising herself to the erect position for any reason whatever. Any infringement of this rule is very apt to be followed by injury to the womb and its surrounding tissues. After confinement, the womb for some weeks is heavier and larger than in ordinary circumstances; and although the ligaments which support it in position are also strengthened during pregnancy so as to give efficient support, after parturition processes go on which impair the relations of the womb to its ligaments, and render misplacement and chronic inflammatory troubles the frequent result of imprudence as regards position during convalescence.

For the first few days, at least, the patient must learn to make use of the bed-pan during micturition, and when the bowels are acted on. The length of time during which the recumbent posture must be maintained varies much according to the strength of the mother, and the circumstances in which she is situated. Strong women, leading a life in the country with plenty of outdoor exercise, certainly do not require to be restricted to the same extent as their more delicate sisters who live in large towns. As a rule, however, it may be stated that no one, however strong,

should be permitted to sit up in bed until at least a week has elapsed from confinement, while the majority of women are much safer in remaining recumbent for a few days beyond that time. There is no doubt that many women, especially in the poorer classes of society, assume an erect posture frequently after only two or three days from their confinement; but there is equally little doubt that much of the chronic uterine disease so common among these classes is due to imprudent conduct in this respect.

A positive indication that sitting up in bed has been indulged in too soon is frequently found in the existence of aching pain at the lower part of the back. If such a pain comes on within some minutes after sitting up, it should be regarded as an indication that the recumbent position should be again adopted for one or two days; if it comes on only after remaining in the sitting position for some time, it should be considered a warning signal not to maintain the erect posture for more than fifteen to thirty minutes at a time. Another indication of risk in this direction is found in the occasional return of red-coloured discharge, after it has disappeared for a day or two. If the change of colour is very marked, the increase in quantity considerable, or if the alteration persists for more than a few hours, it is wise again to resume the lying-down position for one or two days. After sitting up to meals, propped with pillows, has been permitted for a few days, without any sense of pain or fatigue being experienced, the patient may be lifted out of bed to a sofa or couch, and remain there for a few hours daily. It is not judicious to try to stand or walk until the sitting posture can be maintained for some hours without fatigue; and care must always be exercised to guard against strain in the first attempts to walk after confinement.

Normal Progress after Confinement may, then, be summed up as consisting of one week to ten days' recumbency, one week of sitting up in bed for gradually lengthening periods, one week of rest on a sofa or couch with occasional gentle efforts in walking; completed by a fourth week of gradual restoration to the ordinary avocations of life. This normal progress coincides with the gradual retrogression of the enlarged and hypertrophied womb to its usual condition. For the first two weeks after confinement the womb can be felt at the lower part of the abdomen at first as large as a small cocoon, and gradually day by day lessening in size and prominence; by the end of the third week it has diminished in size so as to become almost imperceptible to ordinary palpation, while at the end of the fourth week frequently no indication is afforded by the womb, as felt through the walls of the abdomen, of any increase whatever in its size. As a matter of fact, the

absolute resolution of the womb to its original size before pregnancy occupies generally six or seven weeks at least; but that recovery is practically perfect in many cases after four weeks is not unfrequently indicated by the commencement of another pregnancy at that period after confinement.

Application of the Binder.—It is usual to continue this to the abdomen during the whole four weeks of convalescence. When properly applied, it is of value in giving support to the over-distended muscles, and tends to preserve the figure from undue laxity. It should be understood, however, that the function of the binder is to support the lax abdominal walls; and it should never be employed for the purpose of compressing the waist. Compression of the waist under such circumstances must mean bulging out lower down, and may lead to displacement of the womb. Rather should the binder be employed for the purpose of supporting and lifting upwards the lower part of the abdomen, so as to remove superincumbent weight from the already over-weighted womb; and, with this object in view, it should always be drawn more tightly together at its lower than at its upper edge. A binder is intended for support, not for compression, and it is only when used for this purpose that its employment is beneficial. When the mother begins to follow her usual occupations, it may conveniently be replaced by a belt, such as has been described as useful in the early stage of pregnancy; and many women will find that the tone of the abdominal muscles is improved and the figure regained by wearing such a belt for two or three months after confinement.

Mothers must make up their minds to tolerate the fact that their waists will probably measure some few inches more on recovery from confinement than they did before the days of pregnancy. The true distinction between the figure of the matron and that of the maiden is found in the fuller bust and wider waist, resulting as a consequence of childbirth; and when the two are found together, they form a harmonious combination, natural and artistic. It is sad that so many women are blind to this fact, and produce artificially an incongruous result by compressing the waist, and causing bulging of the lower part of the abdomen.

The Hair and Skin.—In the later months of pregnancy it will generally be noticed that the hair becomes somewhat more coarse in quality, while at the same time the skin tends to become a little roughened. During the first few weeks after confinement women usually desquamate to some extent, and at the same time lose some of the hair of the head, which is replaced by hair of a finer texture, but generally of rather darker colour.

The *desquamation of the skin* may be so slight and gradual as to escape notice, unless attention is specially directed to it ; but sometimes it is quite obvious, the surface of the skin coming off in distinct small scales, such as are noticed after measles and some other febrile diseases. At the same time, there is a tendency to lose any teeth which may not be quite healthy ; and occasionally even teeth apparently quite healthy loosen and fall out after parturition. In view of the possibility of this, it is judicious for expectant mothers to have their teeth examined by a dentist in the early months of pregnancy, so that any incipient disease may be arrested, and the teeth prepared to resist as far as possible any prejudicial influence.

The *deepening of colour of the hair after confinement* is somewhat inexplicable ; but the same phenomenon is observed usually when the hair has been temporarily lost from any other cause, and the growth subsequently renewed. The colour darkens more and more with each successive confinement.

Drawbacks to Rapid Convalescence.—While convalescence after confinement usually progresses in the satisfactory and pleasant manner already described, there are occasional drawbacks to which a little attention will now be given.

Reference has been already made to the occasional occurrence of marked *fætor* in the vaginal discharge. When this exists, and sometimes even before its presence becomes apparent, the mother sometimes is attacked with feverishness, manifesting itself generally first by sensations of cold, accompanied or followed occasionally by distinct shivering and chattering of the teeth ; and afterwards by a sense of dry heat and discomfort following the sensations of cold. There may be distinct headache, and a general sense of uneasiness usually exists along with the sensation of increased heat. The initiative shivering of fever is to be distinguished from the nervous shivering described above as occasionally following parturition, by its late appearance, perhaps two or three days after confinement, by the distinct sensation of cold experienced, by the presence of headache, and by the succeeding feverishness. Its occurrence should always be considered a reason for sending at once for the medical attendant, as the early treatment of the cause giving rise to the fever is most important for the prevention of further mischief. Very often the cause may be slight and of temporary duration, and the medical man may be able at once to take effective means to restore the patient to her normal convalescent condition.

Susceptibility to Infection.—During convalescence from confinement women are particularly susceptible to the infection of

various contagious diseases such as measles, scarlet-fever, small-pox, &c.; and great care should always be taken that any possible source of infection, direct or indirect, is carefully excluded from the house. It is not sufficiently recognised that infection can very easily be conveyed in letters; and it is judicious to arrange that all letters addressed to women convalescing from confinement should be opened and read by some one else before being given to the convalescent patient. It is a serious shock to a medical attendant to be told by his patient that she has just received a letter from a female friend apologizing for her inability to visit her, in consequence of being detained at home nursing her children in scarlet fever or measles. And such experiences are not unfrequent.

Helps to Convalescence.—In conclusion, it may be added that the best safeguards for ensuring satisfactory convalescence are cleanliness, fresh air, and as much sunshine as can be obtained. The two first are at the command of every one. There is no greater risk of taking cold after confinement than at any other time, and the more and the further windows can be opened to admit external air, the more satisfactory will be the progress of the invalid. Temperature of course will have to be regulated; and when the external air is too cold to admit of continuously open windows, a good fire in a bedroom is an admirable aid to ventilation; but even in cold weather it is wise, for a few minutes at a time, twice or thrice a day to have the window of the bedroom opened widely, care being taken that the mother and baby are at the time properly covered with blankets.

CHAPTER X.

THE MOTHER IN RELATION TO THE INFANT.

DUTY OF MOTHER TO SUCKLE INFANT—OCCASIONAL EXCEPTIONS—NORMAL SECRETION OF MILK—IMPORTANCE OF COMMENCING SUCKLING SOON AFTER CONFINEMENT—PROCESS OF SUCKING—FLATNESS OF NIPPLE—MANAGEMENT—BREAST-PUMP—EMPLOYMENT OF OLDER BABY—SORENESS OF NIPPLE—FISSURES OF NIPPLE—FULNESS OF BREASTS—INSUFFICIENT FLOW OF MILK—METHODS OF INCREASING FLOW—FREQUENCY OF SUCKLING—INDICATIONS OF DISCOMFORT OF BABY—PROBABLE MEANING—TENDENCY TO PAINFUL DIGESTION—SUSCEPTIBILITY OF INFANT TO IMPROPER DIET AND DRUGS TAKEN BY MOTHER—TENSION OF BREASTS—LOCALISED HARDNESS AND SWELLING—ABSCESS OF BREAST—RELATION TO FISSURES—IMPORTANCE OF CLEANLINESS—OBJECTS OF TREATMENT—QUESTION OF GIVING UP NURSING—NORMAL DURATION OF NURSING—INDICATIONS POINTING TO PROPRIETY OF CESSATION—SYMPTOMS DUE TO OVER-NURSING—RELIEF OF SYMPTOMS—ARREST OF SECRETION OF MILK—GENERAL TREATMENT—LOCAL APPLICATIONS.

With most mothers a considerable portion of the period of convalescence from confinement is occupied, and most agreeably occupied, in administering to the nutrition of the new-born infant; and the remark may reasonably be made that information with reference to the function of lactation should have appeared in the previous chapter. The importance of the subject, however, it may be urged, claims a separate chapter for itself; and as the adaptation of the breasts for this function commences some time before confinement, while their utilization for the nourishment of the infant usually continues for many months after complete convalescence, the propriety and convenience of a distinct chapter relating to lactation seem fully justified.

As a general rule, it may be said that it is *the duty of every mother who can do so to suckle her own infant*. It is a duty which she tacitly accepts when she undertakes the other responsibilities inherent to married life, and on its proper fulfilment may depend largely the future health of her child.

Exceptions: Constitutional Obstacles.—To this general rule there are some exceptions, involving considerations relative respectively to the health of the mother and of the child.

There are some conditions of health in the mother which may render it injurious for her to undertake the fatigue and strain of

nursing her baby. The propriety of refraining from nursing will generally be indicated by the medical attendant; but it may be stated that the existence of any chronic disease affecting the general health, and more especially the presence of any tendency to consumption, renders nursing distinctly prejudicial to the mother.

In the interests of the infant, also, it may be desirable sometimes to abstain from nursing. There is no doubt that children inherit constitutional taints, such as predispositions to scrofula, rickets, or consumption from their parents; and there is strong evidence that these hereditary peculiarities, when inherited from the mother, are increased in intensity if the infant is nourished by its mother's milk during the early months of life. In cases, then, where the mother suffers from any marked constitutional taint of this character, it is proper for her to sacrifice, in the interests of the child, the pleasure she might enjoy from nursing it; and to submit to the alternative of employing a wet-nurse, or of having the infant brought up by hand, according to the advice of her doctor.

Insufficient Secretion of Milk.—Again, a considerable number of mothers are physically unable to nurse their infants on account of the secretion of milk being altogether wanting, or so deficient in quantity as to be insufficient for the due nourishment of the child. This deficiency does not seem invariably to depend upon the condition of the general health, for it is not unfrequently observed in mothers apparently perfectly healthy in other respects. Conditions of life seem to have some influence in the matter, for it appears undoubted that this incapacity for nursing is noticed more frequently among the richer classes, and among those living in towns, than among the poorer classes, and those whose residence is mainly in the country.

Inability on the Part of the Infant.—Sometimes also an infant will exhibit a dislike to being nourished by its mother, and will refuse to suck the breast properly. In some cases, this will be found to be due to a difficulty arising from the shape of the mother's nipple; but in other cases, apparently, the dislike arises from some peculiar quality of the milk, which is distasteful to the child. When a child refuses to suck the breast, it is, of course, always necessary to be certain that it is not incapacitated from doing so by any malformation of the mouth or nose.

Development of Lactal Secretion.—From a very early period of pregnancy some enlargement of the breasts is generally observable, as has been pointed out in Chapter III.; and not unfrequently the enlargement is accompanied by an occasional slight watery discharge from the nipple. More exceptionally,

the discharge is of a distinctly milky character. From one to three days after confinement the breasts usually become very full and tense, the tension sometimes being so great as to give rise to considerable discomfort. At the same time, often some degree of headache is experienced, and the temperature of the body may be somewhat raised, while sensations of thirst, due to the slight fever, are complained of. These symptoms, which are caused by the physiological excitement of the breast associated with the rapid secretion of milk, are relieved when the infant succeeds in partially exhausting the breasts by sucking; and frequently the relief is increased by an almost continuous slight flow of milk from the breasts during the intervals of nursing.

It is always very desirable that the infant should be induced to suck the breast regularly at intervals before this tension and fullness manifests itself. It is proper to place the child to the breast as soon after its birth as its mother is able to receive it, and to repeat the process every two or three hours, as it is found that the stimulus of the baby's sucking induces the breast of the mother to fulfil its function in secreting milk. Another reason for so doing is found in the frequently undeveloped condition of the nipple in women who are nursing a child for the first time. Often the nipple does not project at all from the surface of the breast, and the child has much difficulty in obtaining any hold upon it. Immediately after the confinement, the breasts are usually somewhat lax, and during that period it is much more easy for the child to draw out the nipple than it would be if its efforts were commenced only when the breasts are tense and full.

The **Process of Sucking** is mainly, but not altogether, a mechanical one. The infant seizes the nipple of the mother between its tongue and the roof of its mouth, and causes a temporary partial vacuum by drawing in its breath; at the same time, it presses upon the base of the nipple with its gums and its lips. The suction acts in the same manner as an exhausting pump upon the small tubes in the mother's breast which contain the milk; the milk being pushed by the compression of the external air towards and into the mouth of the child. This is the purely mechanical part of the action; but in addition there is assistance from physiological muscular action. The tubes containing the milk in the breast have muscular fibres in their walls which contract and press out the milk when stimulated by the sucking action of the child's mouth, and these contractions have sometimes so much effect that the milk is actually squirted into the infant's mouth more rapidly than it is able to swallow it. This reflex influence, as it is called, on the milk tubes not unfrequently affects

not only the breast the child is sucking, but also the other one, so that it is not uncommon to observe a discharge of milk from one breast, while the child is exhausting the other.

Depression of the Nipple.—When the nipple is so flat or depressed that the efforts of the child to seize it are ineffectual, some means must be resorted to to draw it out, and thus second the efforts of the infant to obtain nourishment. The best method of doing this is by the use for a few days of an artificial nipple fitted on to a glass shield, which, when slightly lubricated with vaseline round the edge, will adhere to the breast around the nipple, and permit of strong suction by the child. The nipple should be attached to the glass without any intervening india-rubber tubing, which when used is exceedingly difficult to keep clean.

When, even with the assistance of this nipple and shield, the infant is unable to draw milk from the breast, either the nurse or the mother must herself draw out the nipple with the aid of an



FIG. 9.—Exhausting Breast-Glass.

exhausting breast-glass. The most convenient apparatus for this purpose consists of a glass nipple-shield forming part of a small glass reservoir, to the upper end of which a piece of india-rubber tubing is attached, long enough to reach to the mouth of the mother when the shield is placed upon the breast over the nipple. When the mother or nurse exhausts the air in the reservoir by means of the tube, the nipple is drawn into the shield, and the milk drawn from the breast runs down into the deeper part of the reservoir. When some quantity of milk has been obtained in this way, it may

be given to the baby either by transferring it to a bottle, or more simply, by replacing the india-rubber tubing with an india-rubber artificial nipple, through which the infant may suck the milk. It is well always immediately after drawing out the nipple by either of the means described above to apply the baby to the drawn-out nipple, and induce it to suck, so as to maintain and increase the improvement obtained. Sometimes, by pressing gently on the breast towards the nipple, the mother or nurse may induce

greater exertion on the part of the baby by giving it the stimulus of feeling the flow of milk. Even at the very early age of one day, infants often show considerable signs of irritation when with all their efforts they fail to obtain any reward in the form of milk; and some patience and coaxing may be required to induce the infant to fulfil its share of the act of obtaining nourishment. Patience and time are well spent in obtaining the end sought, for the nourishment of the child never proceeds so satisfactorily when the use of artificial nipples has to be resorted to for any length of time.

If the artificial nipple and the breast exhauster have both been inefficacious in improving the condition of the nipple, an older baby, when available, may be utilized to exhaust the breasts, and will occasionally succeed in drawing out the nipple after artificial means have failed to effect an improvement.

Tenderness of the Nipple.—The early efforts of the infant to seize the nipple often result in some pain and discomfort to the mother, and not unfrequently the tender skin covering the nipple becomes somewhat raw and sore. For the purpose of obviating this, some women for two or three weeks before confinement attempt to strengthen and harden the skin of the nipple by bathing it two or three times a day with whisky or brandy or eau-de-Cologne somewhat diluted with water. It is doubtful if this method of preparation for nursing is of much value; and sometimes it is positively injurious, making the skin so hard that it cracks, and presents tender fissures when drawn out and pressed on by the mouth of the baby. On the whole, it is best to leave the breasts untouched until after confinement, and when suckling is commenced to be very careful always to bathe and afterwards dry the nipples thoroughly with a clean handkerchief or soft towel immediately after the infant has ceased nursing. If any rawness or soreness is present, a simple salve such as cold cream or vaseline may be applied after the nipple has been carefully dried. Any salve thus used must be removed by sponging before the child is again allowed to take the breast. When the friction of the clothes against the nipple is unpleasant or irritating, the use of small lead nipple-shields in the intervals of nursing will be found grateful, and they assist in maintaining the healthy condition of the skin covering the nipple. Convenient shields of this kind are sold under the name of "Dr Wansbrough's Nipple Shields."

When fissures of some depth are caused in the nipple by suckling, it may be necessary for two or three days to resort to a glass shield during nursing, so as to give the fissure time to heal

The application of one or two coats of flexible collodion over the fissure assists much in giving the rest necessary to effect a cure. Fissures of this kind often bleed to some extent when the child is suckling, and when the blood is noticed on the mouth of the infant, it may lead to an erroneous impression that it is due to some disease of the child. Occasionally the baby will swallow some of the blood ; and if it becomes sick afterwards, the vomited blood may excite much alarm. An examination of the breast and the detection of the fissure will explain the occurrence and reassure the anxious mother.

When the secretion of milk after confinement is at the commencement characterised by much **fulness, tension, and discomfort** of the breasts, relief will generally be afforded by the employment of some laxative medicine. The most eligible for this purpose is compound liquorice powder or castor oil. Saline purgatives, otherwise very useful in relieving tension of this kind, are ineligible on account of the fact that they generally act severely on the infant as well as the mother, being conveyed to the infant by means of the milk. At the same time, the mother should somewhat restrict her diet, abstaining for a day or two from much meat, and from all stimulants, and limiting the amount of fluid nourishment. Relief will be obtained also by having the breasts gently rubbed two or three times a day with olive oil or with camphorated oil, the rubbing being directed from the base towards the nipple. In the intervals of rubbing, a cool lotion made of equal parts of eau-de-Cologne or rectified spirit and water may be kept applied over the breasts on a folded handkerchief or piece of lint. When the flow of milk from the breasts in the intervals of nursing continues to such an extent as to render the clothing wet and uncomfortable, the application of some absorbent wool tissue will absorb the superfluous milk, and conduce to the comfort of the mother. The wool tissue must be changed as often as necessary.

Insufficiency of milk.—Sometimes the amount of milk secreted by the breasts will be found to be insufficient for the wants of the infant. Instead of becoming very full and discharging some milk from the nipple, the breasts will remain more or less flaccid, and when pressure is made upon them only a little watery fluid exudes. In such cases some efforts should be made to increase the flow of milk before suckling is given up as being hopeless. Increased richness of diet, the imbibition of considerable quantities of milk, and the addition to the diet of some stimulant in the form of good Burgundy or stout, will often afford material improvement in the quantity and quality of the milk secreted. Some drugs

seem to have a beneficial action in this respect, and will occasionally be prescribed by the doctor in attendance. It should never be forgotten that the most powerful stimulus to the secretion of the breast is afforded by the sucking of the child; and even where milk is small in quantity, the child should be put to the breast at regular intervals, any deficiency being supplemented by artificial means only after both breasts have been exhausted by the infant.

Frequency in Suckling.—The frequency with which an infant should be nursed by its mother will vary somewhat with the quantity and quality of the milk, and with the robustness and appetite of the child. Generally speaking, for the first month or two of life, an infant requires to be nursed at least once every two hours during the day-time, and once every three or four hours during the night. If the secretion of milk is abundant, the intervals may be lengthened a little; while, even if the quantity is not very great, it is seldom desirable to nurse more frequently than every hour and a half. When the child is five or six weeks old, efforts should be made to lengthen the intervals of nursing during the night; often at the end of two months an interval of five hours can be obtained during the night, which is a very great boon to the mother. When the child has attained three months, the intervals during the day can often be increased to three hours, while at night the child will frequently sleep five or six hours without requiring the breast; and those intervals will usually be maintained until the child is weaned. Exceptionally, in the later months of nursing, some children will sleep throughout the whole night without requiring to be fed, but this is unusual; and a mother may consider herself fortunate if, after nursing her child when she goes to bed about ten o'clock, she is able regularly to enjoy unbroken rest until four or five o'clock in the morning. If the infant at that time demands food, it will usually go to sleep again afterwards, and a further rest may be obtained until eight or nine.

Signs of Indigestion.—If an infant is healthy, and the milk of the mother satisfactory, it is usually perfectly quiet and comfortable immediately after nursing, and in its earlier days generally inclined for sleep.

If, however, it is restless, obviously uncomfortable, and inclined to cry, it may be concluded that either the digestion of the infant or the quality of the milk of the mother is at fault. Very frequently the cause of the discomfort is found in the stomach of the child being overloaded with milk, and distended to such an extent as to interfere with digestion.

When the supply of milk is generous, many infants habitually ingest more than they are able to accommodate or digest. Usually, after a few minutes, relief is afforded by vomiting, and the superfluous contents of the stomach being thus disposed of, the infant settles down in comfort to digest what remains. In infants the act of vomiting seems to be painless and not unpleasant; and, unlike what occurs in older people, only the superfluous amount, not the whole contents of the stomach, is evacuated by the process. Many infants are in this way habitually sick after nursing, and yet make most satisfactory progress, and continue in perfect health. It is possible, of course, when an infant overloads its stomach in this manner, to withdraw it from the breast before it has reached the point of satiety; but the infant usually resents this, and shows its resentment by loud crying. A rather more satisfactory manner of dealing with the difficulty is found in partially exhausting the breast with a breast-pump before allowing the baby to nurse; it will then usually be tired of sucking before it has been able to extract sufficient milk to overload its stomach. Rather more effort on the part of the child is required to obtain milk as the breast becomes gradually exhausted; and the infant seems to cease sucking when the effort appears out of proportion to the result obtained. When hungry, a baby will exert itself strongly to obtain milk from a breast comparatively empty; while, when partially satiated, it will scarcely suck at all even a breast moderately full.

As a rule, only one breast should be employed for each meal of the child, the breasts being alternately used. By this means it is much more easy to prevent the nipples suffering from injury; and the baby is usually satisfied at less cost to the mother. It is found that the milk first discharged from the breast is somewhat richer in quality than that secreted later. In exhausting fully one breast at a meal, the infant gets first the richer milk with slight exertion, then milk of a poorer quality with somewhat greater exertion; and the temptation which presents itself to the infant to take too much is lessened. If, on the other hand, the baby is taken away from one breast before it is exhausted, and presented to the other, it again gets the richer milk with comparatively slight trouble, and is very apt to take more than its stomach can properly accommodate.

Circumstances of course may present themselves where it is desirable to utilize this difference in the secretion and discharge of the milk. Thus, if an infant is not very strong, and easily gets tired when nursing, it may be desirable to remove it from one breast before it has exhausted it, and place it to the other, so that it may have a larger and richer meal without much fatigue or exertion.

If the secretion of milk is not very copious, and the infant strong and robust, even from very early days it may demand the contents of both breasts at one meal ; and probably the majority of nursing mothers find that after four or five months of nursing the contents of both breasts are not too much for the capacity of the child. At that time from birth, however, the intervals of nursing will usually have lengthened considerably, so that the exhaustion of both breasts will not be such a tax upon the strength of the mother as it would have been in the earlier days of maternity.

There can be little doubt that some children are born with a *tendency to painful digestion*. Cases are met with where no apparent fault can be found with the milk, and where the evidence of marked growth and progress indicate the satisfactory nourishment of the child ; and yet where every act of nursing is followed by some discomfort and pain. Careful examination of the excretions of the child will in such cases give no indication of imperfect digestion, and when indiscretion in diet on the part of the mother has been excluded, the existence of exceptional irritability of the stomach must be suspected. Before accepting this as an explanation, however, one should be fully satisfied that no other possible source of discomfort is present. The possibility of over-richness of the milk and of over-filling of the stomach should be kept in view ; and the excretions of the bowels and kidneys should be examined frequently so that assurance is felt as to their perfectly healthy condition. Many cases of apparent irritability of digestion will be found to be caused and maintained by some error or peculiarity of diet on the part of the mother. The stomach of the most healthy infant is a very sensitive organ, and will often resent the intrusion of milk affected in character by articles of diet which have not caused any discomfort to the mother. Mention has been made of the facility with which saline medicines taken by the mother are absorbed by the infant through the breasts. In like manner infants are found sometimes to be affected by raw fruits, such as strawberries or cherries, eaten by the mother, or by acid fluids, such as sherry wine, or vinegar used in dressing salads, or in sauces. In all cases where irritability of digestion is present, thorough enquiry should be made into the diet of the mother, and experiment should be made as to the effect of abstinence for some days from any article of diet of doubtful propriety. When the mother herself is conscious of discomfort in digesting any special food, no doubt can exist as to its prejudicial influence on the child ; and no true mother will hesitate to abstain from any article of diet when she knows that by doing so she can shield her infant from discomfort and pain.

Discomfort in the Breasts.—When the breasts are full of milk, they will often be remarked to be somewhat tense and lumpy, and there may exist a general feeling of tenderness on pressure upon them. The tension and tenderness will be found to disappear, as a rule, entirely when the breasts have been exhausted by the infant. Sometimes it may be observed that at some limited spot in the breast a feeling of hardness remains, or it may be that an actual small swelling may be perceived, which remains somewhat tender to touch. This swelling is usually the result of some impediment to the escape of milk from this particular part of the breast. The attention of the doctor and the nurse should be called to any abnormality of this kind, as there is a risk that if attention is not given to it, it may eventuate in abscess. If the tenderness is marked, or if the breast feels at all weighty, care should be taken to avoid injury by supporting the breast either on a pad inside the corset, or by means of a handkerchief tied round the neck, and passing under the breast; and the swollen and tender part should be rubbed gently two or three times a day with a little olive or camphorated oil. By those means it will usually be found that the size of the swelling will gradually diminish and the tenderness decrease, and generally, in a period varying from a few days to a fortnight, all anxiety about the condition of the breast will have disappeared. In exceptional cases, however, instead of becoming smaller the swelling will tend to increase, the tenderness will continue, and the skin over the swelling may become somewhat reddened. When this occurs, and when further a little pitting of the skin is noticed on pressure of the finger over the swelling, no doubt can remain that the imprisoned milk has become decomposed, and that an abscess has developed, and measures have to be taken to promote its speedy evacuation.

Abscess of the Breast does not always come on in this slow and gradual manner. Sometimes, on the contrary, the pain in the breast may come on suddenly, accompanied by feelings of cold, and even shivering, succeeded by feverishness and restlessness. Again, occasionally the shivering and feelings of cold precede any pain in the breast; and it is only by careful examination of both breasts that the medical man may be able to determine to what the fever is due. In acute cases of this kind, from a very early period, redness of the skin of the breast covering the seat of inflammation is usually noticeable, and the pitting on pressure of the finger can generally be made out early. The pain and tenderness are often accompanied by considerable throbbing, and a sense of much increased weight.

The fact that these acute abscesses of the breast usually com-

mence with feelings of cold, and a tendency to shiver, often gives rise to the erroneous idea that exposure to cold has been the exciting cause of the inflammation. It is, however, exceedingly doubtful if exposure to cold is ever alone the cause of acute abscess of the breast. Mention has been made previously of the cracks or fissures which sometimes develop on the nipples at the commencement of nursing. In addition to the discomfort which these cause, there is good reason to think that to their existence is due most of the acute abscesses which occur in the breast during nursing. They afford, as it were, an entrance or doorway through which impure matter may enter into the breast, and set up the acute inflammation which terminates in abscess. The important fact to notice in relation to this is, that it is not apparently the existence of the fissures which causes the inflammation; it is the entrance through the fissures of impure matter which may possibly have formed in the fissures themselves, but which may also have been conveyed into them by unclean hands, or clothes, or applications. The obvious lesson is to emphasize the *great importance of absolute cleanliness during nursing*, and this even when no apparent fissure exists. A fissure or crack in the nipple, so small as to give no inconvenience and to be unobservable without close examination, may be quite large enough to admit the entrance of impure matter sufficient to generate an abscess. For this reason, therefore, as well as for others already mentioned, the practice of bathing the nipple carefully after each time of nursing should be rigidly adhered to. As a rule, it is quite sufficient to use clean warm water for the purpose; but when any fissure or erosion of skin exists, it is safer to use for mixing with the water some antiseptic fluid such as Condyl's fluid or "Sanitas" fluid. Either of these may be employed in the proportion of one ounce (two tablespoonfuls) of the fluid to one pint of warm water.

When it becomes obvious from the tenderness, the redness, and the pitting on pressure that a swelling of the breast is developing into an abscess, the two objects of treatment are to limit the size of the abscess as much as possible, and to evacuate the contents as quickly as possible. The greatest comfort is usually obtained from the application of warm linseed poultices, and from frequent fomentation with very warm water. At the same time, the breast should be carefully supported by a handkerchief passed underneath it, and tied round the neck in the form of a sling, and care should be taken to prevent all pressure from clothing. In some few cases the application of ice tied into a waterproof bag and laid on the seat of the abscess gives more relief than the warm application; and there is no objection to its employment when found

effective in relieving pain and subduing inflammation. An ordinary sponge-bag, half-filled with broken ice and closed carefully by a large cork being tied into the open end, may be used advantageously for this purpose. When, in the opinion of the doctor, the time has arrived for letting out the matter contained in the abscess, the patient should courageously nerve herself to permit of the small operation necessary for her relief. She should remember that it is for the benefit of her health generally, as well as for the preservation of the breast, that the enclosed matter should be released, and that her power of future nursing may be impaired by delay. By various methods the slight incision required to open the abscess may be made almost without pain, and the escape of the matter will always be followed by great and immediate relief.

At some period during the formation of an abscess in the breast the question will generally arise, whether nursing is to be continued or given up. In this matter the mother must be guided entirely by the advice of her medical attendant. In the majority of cases, even after abscess has formed in one breast, it is not only possible but desirable to continue to nurse with the other, while, if an abscess is small and heals rapidly, it may be possible to resume nursing even with the breast in which the abscess has occurred. In some cases, the extent of the abscess and considerations relative to the health of both the mother and infant will dictate the cessation of nursing, and steps will have to be taken which will be described later to arrest and prevent the secretion of milk.

The length of time during which nursing may be continued varies much in different mothers. As a rule, the flow of milk will continue from six months to a year after childbirth; in some exceptional instances it may be found to last from eighteen months to two years. If the mother remain in good health, and the infant appears to flourish, nursing may be continued with safety as long as the secretion of milk in the breasts persists. It will generally be found that after eight or nine months' nursing, if not before that time, the amount of milk secreted will be inadequate to the wants of the infant, and the diet will have to be supplemented by the addition of some artificial food. The progress of the infant must be carefully watched, as it cannot be depended on to exhibit signs of discomfort from hunger when only the quality of the mother's milk has deteriorated, if, at the same time, the quantity is maintained. It may usually be presumed, when a child without any appearance of illness ceases to gain weight and to grow properly, that some error or deficiency exists in the diet, which calls for correction or addition.

The propriety of ceasing to nurse her infant may be indicated to the mother in various ways. Most commonly the secretion of milk becomes diminished, sometimes gradually, sometimes somewhat rapidly, and it becomes obvious that even when sucking strongly the baby obtains but little milk, and that with difficulty; and in consequence exhibits by crying signs of dissatisfaction and hunger, which are only appeased by the administration of additional food. No rush of milk into the breast is felt by the mother such as she frequently experiences when the breasts are secreting copiously, and even after a few hours' cessation from nursing the breasts will be noticed unfilled and flaccid.

Not unfrequently the first indication that nursing has been persevered in sufficiently long is afforded by some *symptoms of deterioration in the health of the mother*. She may feel languid and incapable of exertion, become somewhat thinner, and look pale and bloodless, and suffer from headaches and loss of appetite. A very characteristic symptom of the depression of health due to long nursing is the presence of pain in the back between the shoulders, usually intensified immediately after the baby has been nursed.

When either the failure in secretion of milk, or the deterioration of general health, indicates that the question of ceasing to nurse the infant must at least be considered, before a final decision is arrived at it is usually desirable to try if assistance can be given to the mother by a more nutritious diet, or by medical tonic treatment. Frequently it will be found that nursing may be continued for a month or two longer if some addition is made to the diet, or if some slight stimulant is taken with meals. For this purpose a basin of thick soup with some toast or bread should be taken in the forenoon between breakfast and the mid-day meal; and some light farinaceous food made with milk taken immediately before going to bed is most useful. Predigested foods, such as Benger's and Mellin's foods, are eligible, employed in this way. As a stimulant, in addition to food, good stout is perhaps the most useful from a nursing mother's point of view; where stout cannot be digested, good Burgundy is a very efficient, if somewhat expensive substitute. Some tonic medicine, in addition to the more liberal diet, aids in increasing the quantity and improving the quality of the milk, and in restoring the health of the mother. This will usually be prescribed by the medical attendant. In the absence of medical advice, it is always safe and generally beneficial to take one or two grains of quinine three times a day before meals, continuing the drug for some weeks if benefit is derived from its use.

If the increased diet and tonic treatment just described have no beneficial effect within a few days after their commencement, it must then be concluded that weaning the child has become inevitable.

Sometimes the flow of milk in the breasts is arrested quite suddenly by some shock. When this occurs, it is very exceptional for it to be restored, and cessation of nursing follows as a matter of necessity.

Not uncommonly, nursing comes to an end because the infant declines any longer to take the breast. This generally occurs when some artificial food has been used to supplement the milk of the mother. The child seems often to take a dislike to its mother's milk after a time, preferring the artificial food; and may refuse entirely to suck the breast, sometimes crying when its mouth is placed in contact with the nipple. It is probable that in most cases of this kind some alteration has taken place in the mother's milk, rendering it unpalatable, as generally infants show a strong preference for the breast over any kind of artificial food.

The Recommencement of Menstruation is generally considered an indication that nursing should cease. While nursing, mothers do not, as a rule, have any menstrual periods; and the reappearance of the menstrual flow is usually accompanied by some alteration in the milk, which causes pain and discomfort to the baby. When this discomfort is not great, nursing may be persevered in; but if the menstrual flow returns in the month following, it is wise, both in the interests of the child and the mother, to terminate the nursing. If persevered in after two successive periods of menstruation have been noticed, the mother is likely soon to feel the strain of nursing in deterioration of health, while the milk she supplies is seldom appropriate to the wants of the child.

There are no doubt a few instances where mothers menstruate regularly during the process of lactation, and apparently without any ill effects to themselves or their infants, but such cases, like those where menstruation persists during pregnancy, are entirely exceptional.

Weaning.—When the resolution to give up nursing has been made for any reason other than the cessation of the flow of milk, some measures will usually be called for to arrest the secretion, and to prevent any injury or discomfort to the mother from the cessation of the function of the breasts. Sometimes it is possible to evade discomfort by making the process of weaning a very gradual one, lengthening by degrees the intervals of nursing, while artificially supplying the wants of the child. When some

little time can be allowed to the weaning process, it will usually be found that after a week or two of lengthening intervals, nursing can be given up altogether without any discomfort beyond perhaps an occasional sense of fulness in the breasts, and it may be a slight discharge of milk from the nipples, which will generally be found to cease entirely after two or three days.

When, however, suckling has to be given up immediately, without time for preparation, some difficulty may be experienced in arresting the secretion, and maintaining the breasts in comfort, and free from excessive distension. The mother should for a few days be very abstemious in diet, taking no stimulants of any kind, and very little meat. A light farinaceous diet is to be preferred, with a moderate allowance of milk; much fluid of any kind is to be avoided. Some saline medicine, such as a seidlitz powder or a large teaspoonful of effervescing citrate of magnesia, should be taken in water every morning; and if this does not act sufficiently on the bowels, it should be supplemented by a compound rhubarb pill, or a teaspoonful of compound liquorice powder taken at night. Some drugs, notably belladonna and iodide of potassium, have considerable effect in reducing the flow of milk, and may be prescribed by the medical attendant.

As a local application to the breast, for the purpose of arresting the secretion, eau-de-Cologne diluted with an equal quantity of water is very effective. It is best applied to the breasts on lint, which, saturated with the eau-de-Cologne and water, should be laid over the whole breast, and covered with some cotton wool. Whisky or gin may be employed as substitutes for eau-de-Cologne, being almost equally effective, if not quite so pleasant in odour. Where the breasts are not too tender to admit of a little gentle pressure, the application of a broad flannel bandage round the chest outside the cotton wool will assist much in preventing the secretion and promoting the absorption of the milk. The flannel bandage should be wide enough to cover the breasts completely, and should be drawn as tightly as is consistent with comfort, and secured with safety-pins. Sometimes gentle rubbing of the breasts will be found of great use in arresting the flow of milk. The rubbing should be in the direction from the nipple towards the base of the breasts, and should be continued for ten minutes or a quarter of an hour at a time, and repeated two or three times daily. It is convenient to use some oily material to facilitate the rubbing, and for this purpose either plain olive oil or camphorated oil may be employed.

The local application of belladonna is of much value in promoting the absorption of milk in the breasts, and its use may be

conveniently combined with the rubbing described above. To this end liniment of belladonna may be mixed in equal parts with the camphorated oil.

When the breasts are too tender to bear any rubbing, belladonna may be painted over them in the form of a glycerine composed of equal parts of plain glycerine and extract of belladonna. This glycerine should be applied twice or thrice daily, and the breasts covered afterwards with cotton wool or lint, pressure with a flannel bandage being used in addition when it can be borne with comfort. Belladonna may also be used in the form of a plaister, cut to the shape of the breast, and made to adhere to its surface. When this method is employed, care must be taken to cut an opening in the plaister for the nipple, so that any exuded milk may escape without difficulty.

By a selection or combination of these various methods of reducing and preventing the secretion of milk, the process of weaning can generally be effected in a few days with comparatively little discomfort. There is no reason for the mother to lay up or abandon her occupations during this period, unless the discomfort is severe, when one or two days' rest in bed will be found of much value. Care, however, should be taken to avoid cold and over-fatigue, which might be injurious by exciting a tendency to inflammation in the breasts.

PART III.

The Child.

CHAPTER XL.

NORMAL DEVELOPMENT OF THE CHILD.

AVERAGE SIZE AND WEIGHT AT BIRTH—VARIATIONS—DESCRIPTION OF SKIN—OF HEAD—SUTURES OF HEAD—FONTANELLES—CRY—GRASP—ANIMAL HEAT—NECESSITY OF WARMTH—TENDENCY TO SLEEP—ACTION OF BOWELS AND KIDNEYS—MECONIUM—NORMAL EXCRETION OF BOWELS—SECRETION OF KIDNEYS—INDICATION OF DISORDER—RECURRING CRAVING FOR FOOD—AVERAGE RATE OF GROWTH IN HEIGHT AND WEIGHT—INCREASE IN INTELLIGENCE—DEVELOPMENT OF SIGHT AND HEARING—TEARS AND SMILES—AMOUNT OF SLEEP—PROCESS OF TEETHING—DEVELOPMENT OF WALKING POWERS—ART OF SPEECH—SECOND DENTITION—ABSORPTION OF FIRST TEETH—PUBERTY IN GIRLS—MENSTRUATION—OCCASIONAL DISCOMFORT—NECESSITY OF CARE DURING PERIOD—CAUTION IN USE OF STIMULANTS—MANIFESTATIONS OF MENTAL AND MORAL DISORDER—PUBERTY IN BOYS—NERVOUS DERANGEMENTS.

The size and the weight of infants born at full time vary within fairly wide limits. The average weight of a new-born male infant is about seven pounds, of a female infant about six and a half pounds, while their height or length averages about nineteen inches, the male averaging a little more than the female in height as well as in weight. First children not unfrequently fall short of this average, and infants born at full time under unfavourable circumstances may occasionally be found to weigh only four or five pounds, and to measure not more than sixteen inches. On the other hand, a weight and size considerably above the average is not unfrequent, babies being often found to weigh nine or ten pounds at birth, and to measure twenty-one or twenty-two inches. Instances of weight much beyond this are rare; the very extreme recorded is a male child about eighteen pounds in weight and thirty-two inches in length.

When first born the *skin of the infant* is of a pale red colour, and is often covered with a whitish-yellow greasy material, which

is washed off by the nurse before the baby is dressed. When the skin has been washed, it will be observed to be covered with fine downy hair, the fineness of which varies much in different children. While sometimes the down is so fine and short as to be observable only on close inspection, frequently it is very distinct, giving a markedly furry character to the surface of the skin. If a baby is healthy, and born after the full time of pregnancy has elapsed, its limbs are firm, plump, and elastic, and its body well covered with fat, so that the underlying bones are well concealed. It has well-developed nails on its fingers and toes, the nails reaching fully to the ends of the extremities to which they are attached.

In proportion to the body, the head of a newly-born infant appears large, forming generally about one-fourth of the total length of the child. If the infant is healthy and strong, the head is firm and well shaped, and the attachment to the body by the neck is strong and resistant. If an infant is weakly, the head is usually found rather flaccid, and its shape is easily altered by pressure, while the neck appears feeble, and sometimes thin, and lengthened by muscular relaxation. At birth the bones enclosing the brain are not rigidly united as they are in adult life. The exterior of the skull is made up of a variety of bones rather loosely attached to each other, and admitting of considerable alteration of the shape of the head under pressure. This capacity for alteration is of great value during childbirth, as it permits of the head adjusting itself to the irregularity of the passage through which birth takes place. The lines along which the bones are joined to each other are generally visible to the eye at birth, and are always distinguishable by touch ; they are known technically as *sutures*. The principal of these sutures are known as the *coronal* suture, the *sagittal* suture, and the *occipital* suture. The coronal one can be felt and seen across the top of the head in front just behind the forehead. The sagittal suture extends along the crown of the head, from the middle of the coronal suture in front, to a point in the centre of the back of the head, where it meets the occipital suture. The occipital suture is angular in shape, the point of the angle being directed to the posterior end of the sagittal suture, and the sides diverging downwards and outwards from thence. The sutures are simply spaces between the bones of the head, occupied by soft cartilage ; and it is mainly the hardness of the bones on each side which renders them so obvious to touch. At either end of the sagittal suture the spaces become somewhat wider, and two small areas of softness become apparent, which are known under the name of *fontanelles*. The anterior of these is of a diamond shape, and varies in size in different infants from a diameter of

half an inch to one of two inches. The posterior one is triangular in shape, the sides of the triangle measuring from half an inch to one inch or more in length. As the infant grows, these fontanelles are gradually filled up by growth of bone, and in a healthy child at the end of two years will be found to be obliterated. Their importance from the present point of view is found in the indication they afford of the progress in development and health of the infant. In weakly infants the fontanelles are often found to close very slowly, and may occasionally be observed even to increase in size for a few months after birth, instead of gradually diminishing. The mobility permitted by the existence of sutures and fontanelles frequently admits of considerable apparent obliquity of shape of the head during the first few days of life. During childbirth the head of the child is often much altered in shape, and immediately after birth one side of the head may be observed larger than the other, or the forehead may seem much flattened and the back of the head lengthened. Such alterations, resulting as they do from pressure before birth, need not be regarded with any anxiety, as in a few days the elasticity of the head will restore the natural contour, and all traces of pressure will disappear. Healthy babies born at full time usually *cry lustily* immediately after birth, the cry being often the first indication of their independent existence. At this early stage it is probably caused by the discomfort arising from sensations of cold. In the womb the infant is surrounded by a watery fluid with a temperature of about 100° F.; on birth it is ushered into an atmosphere which rarely exceeds 60° F., and the baby's appreciation of the reduction of temperature is often indicated by marked shivering as well as by loud crying. The crying and shivering usually cease immediately that the child is enveloped in a warm blanket. Some discomfort in addition is felt by the child from the absence of general support to the body after birth. While in the womb some pressure is exerted on all the surface of the child's body by the pressure of the abdominal muscles of the mother acting through the medium of the amniotic fluid; after birth this sense of pressure and support is lost. That its loss is felt by the infant is evinced by its restlessness even when kept perfectly warm, unless some support is given to it by blankets or pillows, and also by the strong tendency of newly-born infants to grasp firmly with the hand anything with which they may come in contact. A newly-born child seems to have an absolute dread of being left without any support, and clings tenaciously to the apron of the nurse or to the blanket in which it may be rolled. If a baby is strong and well nourished, its grasp is firm, and it moves both its arms and legs with activity.

When maintained in proper warmth, its hands and feet are found to remain warm and natural in colour, the face looks pink and healthy, and the breathing is regular and full. If exposed much to cold, however, even a strong baby will soon show signs of lessened vitality. The fingers and toes will become blue and cold, the face somewhat pinched, and the nose pale, and the breathing somewhat shallow; and when the child cries the voice will be found feebler and the cry more moaning in character. These alterations invariably indicate the necessity of great care in maintaining warmth, and may call for the early attention of the medical attendant.

During the first one or two months of a child's life, almost the whole of its time is devoted to sleep, except when occupied in receiving food. The tendency of a healthy infant under two months old is to fall asleep immediately after taking nourishment, and to remain asleep until it again awakens under the stimulus of hunger. This rhythm is liable to interference from various causes, the most common of which is discomfort in digestion. A considerable proportion of babies suffer from some discomfort after taking food, and indicate the fact by restlessness, by frequent crying, by flatulence, and by occasional sickness. Whatever discomfort a baby suffers from, it inclines to attribute to hunger, and if the opportunity is given to it, it will always try to allay the discomfort by the imbibition of food. This is apparently the result of a healthy instinct. A healthy baby properly tended *ought* to know of no discomfort except hunger, and when discomfort of any kind exists it instinctively refers it to this cause. It is for the more experienced nurse or mother to differentiate between the causes of discomfort, and to apply the proper remedy. Too frequently the discomfort resulting from indigestion is mistaken for hunger, and the disorder increased by the administration of more food before the previous meal has been healthily disposed of.

Generally both **the bowels and the kidneys** of a newly-born infant act once or twice during the first twenty-four hours of life. The first one or two actions of the bowels differ from the subsequent ones, being generally very dark in colour, sometimes almost black. What passes from the bowel at this time is known technically as *meconium*, and consists of secretions from the liver and bowel during intra-uterine life. After the meconium has passed away, and the baby has been fed once or twice with milk, the motions become yellow in colour, and of the consistency of thick cream. This colour continues during the first one or two years of life, becoming gradually slightly darker. The motions are usually unformed during the first few months of life, consisting merely of a uniform mass, unless the form has been modified

by constipation, when hard lumps of fæces may be passed. On an average, a young baby's bowels will act three or four times in the twenty-four hours. At the same time two good motions daily are quite compatible with perfect health, while five or six actions daily would not be considered abnormal if the character of the motions remained quite healthy. Anything beyond that would be considered excessive, and would probably call for some alteration in diet. The excretion from the bowel of a healthy infant has a very slight odour; marked fætor of the motions is always indicative of some failure in digestion, or some error in diet.

The Secretion from the Kidneys in infants is usually of a very pale colour, is not irritating to the skin with which it comes in contact, and imparts almost no smell to the diapers which absorb it. The bladder is emptied with very varying frequency in different children. Five or six times daily is usual; in children who take nourishment very freely, eight or ten times a day is not uncommon. No amount of frequency need excite anxiety if the urine appears normal in quality. Indications of disorder are found in fætor of the diapers, increased depth of colour, presence of small quantities of red sand, and irritation of the thighs of the child. The presence of a small quantity of sand or gravel in the urine of very young babies, if only very occasional, is not to be viewed with any anxiety; but if it occurs at all frequently, some alteration of diet is necessary. Irritation and redness of the thighs of a child ought always to call attention to the condition of the urinary secretion. It may of course occur when the urine is perfectly healthy, if the diapers are not changed with sufficient frequency, but in a well-tended child its existence will always excite the suspicion of some unhealthy condition of the urine. Nurses are somewhat apt to blame the washing of the diapers when irritation of this kind occurs; the possibility of this source of irritation can always be tested by making use for a week of diapers washed at home, or of the cotton-wool and gauze diapers sold under the title of "bapkins."

Growth and Progress.—Every healthy child is born with a periodically recurring craving for food, evinced by a tendency to suck anything placed between its lips, and a readiness to swallow anything pleasing to its tongue and palate. If its lips and mouth and nose are properly formed, and its breathing power good, it can suck even from its earliest days with considerable effect, and evidently derives much pleasure from exercising this function if a due reward is obtained in the form of a satisfactory supply of milk. Obtaining this, and exercising its other functions healthily, the young infant usually grows with considerable rapidity. Often an

increase of weight of four to six ounces weekly will be observed ; sometimes even half a pound may be gained in one week. The progress in weight is seldom quite uniform ; in one week a great advance may be made, while in the next comparatively small progress is noticed. On an average, during the first year a gain of more than twelve pounds is observed, perhaps two-thirds of which may be made in the first six months, the increase in weight being somewhat slower as the child grows older. Children who are over the average weight at birth generally progress for the first one or two years with greater rapidity than those who have been born under the average weight. Coincidentally with increased weight, increase in height or length is observed ; during the first year a gain of eight or nine inches in length is usual. During the second year of life increase of weight and height does not progress at such a rapid rate ; the usual increase of weight during this period is from four to five pounds, while the stature increases by four or five inches. After the end of the second year, speaking generally, about four pounds is added to the weight yearly, while the height is increased by a little more than two inches annually. A table of average measurements of weight and height at different ages of both males and females is annexed.

AVERAGE HEIGHTS AND WEIGHTS OF CHILDREN.

(ADAPTED FROM "A TEXT-BOOK OF HUMAN PHYSIOLOGY,"
BY LANDOIS AND STIRLING.)

Age in Years.	Height in Inches.		Weight in Pounds	
	Males.	Females.	Males.	Females.
At birth	19½	19	7	6½
1	27½	27	22	20½
2	31½	31	26½	25
3	34	33½	29	27½
4	36½	36	33	31
5	39	38	36½	34
6	41	40½	39½	36½
7	43½	43	44½	40½
8	46	45	48½	43½
9	48	47	52½	49½
10	50½	49	57½	53½
11	52	50	61	57½
12	53½	52	68½	67
18	55	54	77½	76
14	58	56½	89	83½

First Indications of Intelligence.—In the early days of infancy, a baby cannot be said to manifest much intelligence. Although usually opening its eyes immediately after birth, its power of vision is very slight, and a finger can be approached close to its eyes without exciting them to wink. It is only after two or three weeks' existence that it will be observed to follow with its eyes any bright light moved in front of them; and few babies will recognize the individual faces of the mother or nurse until at least two months old. If before this age the baby cries when carried by one person rather than by another, it is due to differences in the comfort of the manner in which it is held, rather than to personal preferences. Many nurses take considerable care to protect the eyes of infants from bright light, but this care is usually quite unnecessary, except when the baby may be suffering from actual inflammation of the eyelids. The eyelids of newly-born infants are somewhat prone to inflammation, resulting usually from irritation received during the process of birth; and it is quite a mistake to attribute the inflammation of the lids to any exposure to light. Babies from two to four months old use their eyes to greater purpose, and will often be found capable of recognizing the faces of their mother and father, and will cry on being confronted with a strange face.

At from three to six months of age they will look about them freely, and will be attracted by any bright-coloured article, and will attempt to seize with the hand objects held in front of them.

The faculty of hearing in infants usually requires some time for development. It is true that from the commencement of life an infant will start when any very loud noise is made, but this is more probably due to the general shock from vibration than to any special auditory sense. It is seldom that a baby will seem to regard any special sound until it is about three months old. At that age it may be found to turn its head at the voice of its mother or nurse, and may show its attention drawn by the striking of a clock. From that age onwards many babies seem to be soothed by the singing of their mother, and some infants of six months will show distinct pleasure at the sound of music, and interest in the ticking of a watch held to their ears.

Babies, as has been observed more than once, are capable of crying from the moment of their birth, and few of them are backward in exercising this power. Although able to cry, they have not, however, for one or two months the ability to shed tears. After crying for a little time the eyes of a very young infant may be noticed to be moist, but the flow of real tears from a baby's eyes is seldom observable until it has attained the age of three

months. Babies smile when very young ; a distinct, pleased smile may often be elicited by tickling or patting the face of a baby one month old, but audible laughter is very uncommon in infants under five or six months of age, and many children never laugh heartily until they have attained the age of one year or more.

Sleep.—Babies vary considerably in the amount of sleep they can take and enjoy. During the first month of life generally an infant sleeps almost continuously except when nursing or being fed or washed. When more than a month old, it will often lie awake for one or two hours at a time, quite happy if in comfort, especially if lying in the nurse's lap or carried in her arms. When two or three months old, if a fairly strong child, it will begin to sit up a little in the nurse's or mother's arm, its back becoming firmer, and the neck bearing the head well when a little support is given by the arm.

At this age it will remain awake for two hours or more at a time ; and when it reaches the age of six months it may remain awake for three or four hours, sleeping only for an hour or two in the forenoon and afternoon, and continuously during the night. From the very commencement of life it is always well, as far as possible, to induce the infant to sleep all through the night, with only intervals for feeding. No doubt this is not unfrequently a matter of some difficulty ; and with some young infants it is impossible, wakefulness at night being not uncommon during the first few months of existence. But patient effort in soothing the infant, combined with attention to keeping it awake and interesting it during the day, will often overcome the tendency to nocturnal wakefulness, and the mother will gain the reward of her cares in the enjoyment of peaceful nights.

From eight months to a year old an infant will generally sleep two or three hours in the forenoon, remaining awake after its forenoon rest until six or seven in the evening. This sleep during the forenoon will often be continued during the first two or three years of life, and should always be encouraged. While at the age of one year it may last for two or three hours, as the child becomes older the duration may be shorter, but even if the sleep only lasts for one hour in the middle of the day, it is of much value to a child of two years old or even more.

From earliest infancy until at least the fifth year, the night's rest should be as nearly as possible one of twelve hours. Generally speaking, the child should be undressed and put to bed before seven in the evening, and should not be taken up and dressed again until after seven in the morning, the disturbance for feeding and for other purposes during the night being effected as

gently as possible. Even in very young infants there should be a change of clothing before laying down for the night's rest, and this change should be made at the same hour every evening.

Process of Teething.—Babies do not as a rule begin to cut any teeth until they have attained the age of six or seven months. At birth the gums are smooth and moderately soft, although firm, and they generally remain in this condition for three or four months. They may then be observed to become somewhat less smooth, and a little swollen towards the front of the mouth; and the apparent increase of fulness is frequently accompanied by increased secretion of saliva, and a tendency to "dribble." This condition may continue for a month or two before any teeth can be felt projecting under the surface of the gum, during which time the baby usually exhibits a strong tendency to bite anything which is placed in its hand, in default of which it frequently employs its own fingers. The teeth which usually erupt first through the gums are the two central ones in the lower jaw; and these are generally followed in two or three weeks by the corresponding ones of the upper jaw. As a not unfrequent exception, the upper ones appear before the lower ones. These teeth which appear in the middle of the upper and lower jaw are known as the *central incisors*. Although appearing as a rule about the seventh month of life, they not unfrequently are observed to erupt two or three months earlier; occasionally babies are born with them fully developed, but such instances are very exceptional. On the other hand, the eruption of the teeth may be considerably postponed, and infants are not uncommonly seen who have attained the age of twelve months without the eruption of any teeth. When the cutting of the first teeth has been delayed as long as a year from birth, there is generally ground for suspecting some slight weakness of health; and this suspicion is strengthened if coincidently with the late eruption of teeth exceptional openness of the fontanelles of the head is observed. Too much importance must not, however, be attached even to the co-existence of these two indications of dilatory development; but their presence may suggest the propriety of medical advice as to conditions of diet and hygiene which may promote the general health and more rapid progress of the infant.

Some two months after the central incisors have erupted, the front teeth at each side of them, which are called the *lateral incisors*, usually make their appearance, the ones in the lower jaw more generally appearing before those in the upper jaw. At the age of twelve months or soon afterwards the first double teeth come through the gum, occupying places some little distance

behind the lateral incisors, from which they are separated by a space destined for the appearance somewhat later of the canine or eye teeth. The double teeth are known technically as *molar teeth*, and the ones which come through first and lie behind the spaces for the canine teeth are termed the *anterior molar teeth*. They are somewhat broad on the top, unlike the incisor teeth, which have a sharp knife-like edge, and are furrowed slightly, having a ridge on the outside and inside, and a hollow between the two ridges. The ridges often break through the gum separately, leaving the furrow covered by the gum for a few days longer, and present the deceptive appearance of two teeth side by side until the bursting of the gum discloses the furrow uniting them.

The *canine* or *eye* teeth usually appear when the child has attained the age of from eighteen to twenty months. They come in the spaces between the lateral incisors and the anterior molars, occupying the angles of the mouth, and are more pointed than any of the other teeth.

The first set of teeth of the child is completed by the eruption of the *posterior molar* teeth, which appear behind the anterior molar teeth generally about the end of the second year of life. The posterior molar teeth, like the anterior, are double teeth with two ridges and a furrow on their opposing surfaces.

From the description given it will be seen that the first set, or, as it is often called, the "milk" set of teeth of a child, is made up of twenty teeth, symmetrically arranged in the upper and lower jaws. Recapitulating their names from the centre in front towards the sides, there are the upper and lower, right and left central incisors, lateral incisors, canine or eye teeth, anterior molars, and posterior molars. The incisors and canines have each one root in the jaw, the lower molars have each two roots, while the upper molars have each three roots.

It is not very uncommon to observe a departure from the usual order of the eruption of the teeth, and no importance is to be attached to irregularity in the sequence of eruption, if average progress is made as regards the number of teeth cut at different stages between six months and two years of age. One frequent irregularity is the appearance of the anterior molars before the lateral incisors; another common variety from the usual order is the eruption of teeth in the upper jaw before the corresponding teeth in the lower jaw, instead of some little time after. A much more unfrequent abnormality is the absence altogether of lateral incisors, sometimes only in one jaw, sometimes in both. When this occurs, the central incisors are generally separated from each other by a small space, as if apparently to occupy as well as

possible the space in the gum originally intended to accommodate four teeth.

Development of Walking Powers. — During the first six months of its life, an infant has practically no power of locomotion. It is entirely dependent upon its mother or nurse for the supply of its wants, being unable even to approach its mother to seek for sustenance, unless it happens to be lying in close proximity to her. This inability is due probably more to the absence of intelligence in directing the muscles than to actual weakness of the muscles themselves. Immediately after birth an infant often exhibits considerable muscular strength, grasping firmly with its hands, moving its arms, and kicking or curling up its legs. But for some months it is unable to employ this muscular power for any useful purpose. The first indication of a growing sense of the power of locomotion is usually observed in the baby "feeling its legs" when taken up in the mother's arms. If held under the arms by the mother while sitting down, a baby of six months will often rest its feet on its mother's lap, and, when encouraged, will place one foot in front of another, walking as it were towards its mother's face. When a month or two older, if laid on the floor, and tempted by any article held just out of reach, the infant will usually attempt to crawl a little on its hands and knees, first stretching a hand out, and then following with one leg if the object has not been attained. At from nine to ten months of age many infants will begin to try to stand beside a chair or sofa, by holding which they can assist in sustaining themselves. Having attained an erect posture by careful adherence to the chair, the enterprising infant of ten months will cautiously move one leg after another round the chair, always taking care to maintain its hold of the friendly support. Continuing to educate its muscles by crawling, by climbing, and by occasionally falling and picking itself up again, in the course of a month or two the child will begin to walk a little without support, and when a year has elapsed from birth may have entered on the higher sphere of existence as an animal possessed of locomotive powers. Children, however, vary much in the age at which they first are capable of walking without assistance; some will not attain the faculty until they are eighteen months or even two years old, while some exceptionally advanced infants will walk unassisted when they have only attained the age of ten months. There is no reason whatever to be anxious about any moderate delay in the development of walking powers in an infant, if in all other respects it appears quite healthy. In this faculty as in others there is great variety among children both in the manner and the rapidity of acquisition.

Some infants never pass through the preliminary stage of crawling, learning to walk by clinging to the legs of chairs and tables or by assistance from their mothers and nurses, without ever resorting to the apparently more simple quadrupedal method of progression. Others again, apparently preferring the crawling to the walking method, will persist in employing it for purposes of locomotion for some months after they might reasonably be expected to resort to the more advanced and intelligent erect posture. At the age of two years every healthy child should be able to walk with steadiness and facility; and when the power of walking is not developed at that age, the possibility of the existence of some physical or mental defect should present itself to the parents, and should lead them to obtain competent medical advice in the matter.

Speech.—The acquirement of the *art of speech* usually accompanies more or less contemporaneously the development of the faculty of walking. At from four to six months old many babies can articulate distinctly the vowel *a*, which is the most easily pronounced of all the vowels; and when one or two months older the addition of one of the labial consonants, *b*, *m*, *n*, *p* can usually be effected. It is more easy for the infant to prefix the consonants than to suffix them, and accordingly the words *pa*, *ma*, *na*, or the reduplication of these in *papa*, *mama*, and *nana*, precede considerably in time the words *am* or *an*. Other single words of one syllable are gradually added to the vocabulary, which usually consists of a considerable number of words before any attempt is made to combine them in a short sentence. A child of one year old can generally pronounce a few words of one syllable, but is rarely able to combine two consecutive syllables in one expression. The small muscles of the larynx by which the sounds are produced are acquiring slowly and laboriously their education, just as the larger muscles of the leg in walking; and combined movements in both cases are much more difficult than simple ones. Children generally find it more easy to pronounce two syllables of one word consecutively than two words of one syllable, the slight rest between the two words seeming to necessitate a fresh effort which is not required when the syllables immediately succeed each other. By the age of eighteen months most infants will be able to express some meaning by two or three short words spoken consecutively; and when the age of two years has been reached many children will be found to have a fair command of short sentences. But the variety in progress in this respect in different children is quite as noticeable as in their walking efforts. Some infants are exceptionally quick in the

attainment of language, speaking with some intelligence at the early age of eighteen months ; others again do not attain to much command of speech until they have completed their third year. It is rather exceptional to find early development of the faculties both of speech and of walking in one infant ; more frequently a baby who is forward in one direction is somewhat backward in the other. When the health of the child is satisfactory, and evidence of intelligence in other respects apparent, no anxiety need be felt about any backwardness in the attainment of speech, if the sense of hearing is ascertained to be sufficiently acute. No difficulty presents itself in doing this ; a baby of six months old, if its sense of hearing is perfect, will have its attention attracted by the tone of a bell or by the voice of its mother, and will show the fact by its expression and attitude.

Intelligence.—With the acquisition of the power of speech comes gradually the sense of the meaning of the words pronounced. Even before the child can itself pronounce the words *ma* and *pa*, it begins to identify their sound with different individuals, and other words when learned are associated with the objects to which they apply. The sense of number can usually be observed in infants between one and two years old, who will be found to distinguish between small numbers such as two and three or four, and who may themselves be able to count up to five or ten. About the same time also they will be found able to distinguish between colours, calling them by their proper names, and selecting particular colours when asked to do so. In regard to appreciation of music, very marked differences are observed in young children. Some babies at a very early age will exhibit preferences for particular tunes, and will at the age of two years be found to identify airs by associating them with names. When the faculty is markedly developed, children from two to three years old will not unfrequently be heard to sing airs quite correctly. On the other hand, many children equally intelligent in other respects exhibit no appreciation of differences of tune, and no faculty of repeating airs even at a much more advanced age. On the whole, it must be admitted that the development of the musical faculty in children, as perhaps also in older people, bears no apparent relation to the cultivation of the intelligence generally. From the end of the third until the sixth year of life the healthy child is found to progress rapidly in development and intelligence, exercising its powers of observation, and storing its memory with the facts conveyed to its mind by its various senses. At this age children are specially receptive and acquisitive, and seldom require or bear well the stimulus of regular teaching. The observation

of everyday life, the information conveyed by communication with older people, and the restless energy in finding out things for themselves usually give sufficient occupation for the brain, which is apt at this age to resent pressure, and to suffer from any undue strain.

Second Dentition.—At about the age of six years children usually commence to develop their *second or permanent teeth*. The first of these to appear are four double teeth, which are situated immediately behind the posterior molars of the first or milk set of teeth. The time of their appearance is very irregular; sometimes they will come through the gum before the age of five years has been reached; in other children their advent may be postponed until the seventh year has been completed. In most cases the lower ones appear first; not unfrequently there may be an interval of some months between the eruption of the lower ones and the upper ones. They are known as the *first permanent molar teeth*. Following these, at about the age of seven years, the *permanent central incisors* push their way through the gums, displacing before them the temporary central incisors, and causing them to drop out. The process of removal of the temporary teeth to make room for the permanent ones is rather interesting. As a permanent tooth grows towards the edge of the gum, it pushes against the root of the temporary tooth in front of it, and causes its absorption. This absorption proceeds to such an extent that frequently the whole root of the temporary tooth disappears, nothing being left of the tooth except the crown adhering to the surface of the gum. As the absorption of the root progresses, the temporary tooth becomes more and more loose, and when the process is completed the tooth is so little attached to the gum that it may be displaced entirely by a slight movement of the tongue. The edge of the tooth, where the process of absorption has ceased, is often very sharp, and from this frequently the mistake is made of supposing that the temporary tooth has been broken off, leaving its root in the gum. This, however, is never the case, except from actual violence; in all cases where the tooth has become loose and fallen out, it results from the absorption of the root due to the pressure of its underlying permanent successor. The central permanent incisors are followed in about a year by the *lateral permanent incisors*; and these again, at about the age of nine years, by the successors of the anterior temporary molars, which in the permanent set are not molars, but are known as the *first bicuspid teeth*. About a year afterwards, between the ninth and tenth years of life, the posterior temporary molars are succeeded by the *second bicuspid teeth*, situated immediately

behind the first bicuspid, and directly in front of the first permanent molar teeth. These bicuspid teeth are strong teeth with a somewhat ridged top, and a single root grooved on each side, indicating as it were a tendency to become double. In the eleventh year the *permanent canine* or *eye* teeth usually make their appearance. They are very large, strong teeth, and have a marked tendency in many children to project forward from the gum; in some cases actually growing almost directly outwards. The upper canines very often cut through the gum very high up, and grow downwards in front of the roots of the temporary canines, in place of pressing against their roots and causing absorption. When this occurs, a very unsightly projection of the permanent teeth results, and it becomes necessary to extract the temporary teeth to allow of the permanent ones falling back into their proper places. Something of the same kind happens not unfrequently with the lower canine teeth, and measures have to be resorted to to regulate their position. From the situation of the canine teeth at the angles of the mouth, the personal appearance and expression is affected more by them than by any of the other teeth; and during their development the propriety of consulting a dentist as to their regulation will often present itself. Not unfrequently the space left between the lateral incisors and the first bicuspid is insufficient to admit of the canines occupying their proper position, and some measures have to be taken to afford space for them, either by the extraction of one of the permanent teeth, or by the application of some mechanism to distend the jaw.

During the twelfth year or a little later the *second permanent molars* usually develop, appearing immediately behind the first molars. The molar teeth of the permanent set, like those of the milk set, have a broad surface suitable for grinding food; the upper ones have each three roots, while the lower ones have only two.

The teeth which come last of all, and complete the permanent set, are the *wisdom teeth*. They are most irregular in the time of their appearance, sometimes being found as early as the fourteenth year, sometimes not coming through the gum until the thirtieth year, and occasionally never developing at all. They resemble in appearance the molar teeth, behind which they present themselves, but are smaller and have only single roots, which, however, are grooved as if to indicate a tendency to separate, in the upper wisdom teeth into three, and in the lower into two branches. The permanent teeth when complete will be seen to number twenty-eight, made up of right and left, upper and lower central

incisors, lateral incisors, canines, first bicuspid, second bicuspid, first molars, second molars, and wisdom teeth.

Puberty.—In describing the progress and development of children up to the age of thirteen years, it has not been necessary to make any marked distinction in regard to sex. Minor differences of weight and height between boys and girls have been incidentally referred to, but the general description given has applied equally to children of either sex. About the age of thirteen or soon afterwards, certain conditions of development present themselves, which necessitate distinct description as they occur respectively in male and female children. These conditions are associated with the attainment of what is technically known as the *age of puberty*, and are intimately related to the elaboration of the sexual functions.

In girls, usually between the thirteenth and fifteenth year, sometimes somewhat earlier, and occasionally later, a considerable change in the figure is observed to occur. The bust becomes fuller and the breasts more prominent, while the figure generally is noticed to be more rounded and matured. Those physical changes, together with the development of hair in some parts of the body, are accompanied or followed soon by the appearance of *menstrual discharge*. For some months before this appears there is often considerable lassitude, tendency to aching of the back at intervals, and mental unrest. Frequently girls are at this period of their lives irritable, nervous, and hysterical, and the condition of the mind is often peculiar and fanciful. Sometimes the appearance of the menstrual discharge is preceded by bleeding from other parts of the body. Bleeding from the nose is common; from the lungs in the form of expectoration of blood, and from the stomach by vomiting it is not so usual, but yet not very unfrequent. Expectoration of blood is apt to lead to the suspicion of lung disease; but when it occurs at the age of puberty, before menstruation has appeared, or coincidently with its appearance, there may be no indication whatever of disease of the lung, or of any tendency to consumption. If such expectoration recurred two or three times at intervals of about a month, the presumption would be very strong that it was due entirely to the increased blood-pressure resulting from the development of the menstrual function. After the first occurrence of the true menstrual discharge, it generally reappears regularly at intervals of about twenty-eight days. It is not, however, at all uncommon to find it arrested for two or three months after the first appearance, then occurring once again, and again intermitting for one or two months. Irregularity of this kind in the first one or two years after puberty

has been attained should not give rise to any anxiety, and does not call for any medical treatment if the general health is satisfactory. At this period of life, however, the general health is rather apt to fail from slight causes, and any departure from health should be watched carefully, and medical advice obtained when necessary. More especially at this age a condition of poorness of blood known as *chlorosis* is apt to develop, evincing itself in pallor of the face, breathlessness on exertion, lassitude, and depression.

The Amount of the Menstrual Discharge, and the number of days during which it continues at each monthly period, vary very considerably in different girls. What would be considered an excessive amount in a weak and anæmic girl might be quite normal and healthful in one who is strong and robust. The only way to judge whether the amount is excessive or not is by the effect produced on the general health of the individual. The menstrual flow, although it may cause a girl to be somewhat pale and languid during its occurrence, should not leave any injurious effect on the health after it has ceased; if it does so, either the amount is excessive, or the health is in some way impaired. A normal menstrual period may last from two to nine days; generally each period is of the same duration in the same individual. The intervals between the periods are also usually very constant in the same individual, although varying to some extent in different girls. The most usual interval is twenty-eight days, counting from the first appearance of one menstrual period to the first appearance of the next. This period may in different persons be curtailed to twenty-five days, or extended to thirty-two days. Any interval less than twenty-five days should be considered abnormal, and medical advice should be sought, as ill results are apt to follow too frequent menstruation. There is not the same risk attached to an unduly lengthened interval, but after the flow has been quite regular for some months, any arrest for a month or more should call for notice and medical treatment.

The health and mental condition of girls at this period of life demand much attention from their mother or other female guardians. As the age of puberty approaches it is proper to tell girls of the probable appearance of the menstrual flow, and to give them some indication of its character and meaning. It is also right to enjoin upon them the necessity of care of their health during the menstrual flow, the risk which may follow any undue exposure to cold or any severe exertion during that period, and the propriety of adopting means to ensure proper cleanliness. At the same time, it should be pointed out to them

that the menstrual flow is a normal physiological process, upon the regularity of which their general health will to some extent depend, and that they ought not to be ashamed to let their mothers or other advisers know of any irregularity or any discomfort which may attend its appearance.

A certain amount of *discomfort* and even of pain is a not very unfrequent accompaniment of the menstrual period, and this may be present in the absence of any disorder of health or local disease of the womb. A great deal can be done to relieve this pain by the use of suitable medicines, and by rest during the first one or two days of the period; and the slight self-sacrifice which may be involved in abstaining from social pleasures during the first one or two days of menstruation accompanied by pain will be amply repaid by freedom from subsequent discomfort, and by perfect health during the intervals. At this stage of a girl's life it is of much importance that attention should be paid to the regular action of the bowels. Constipation is a common trouble at this period of life, and is a frequent cause of discomfort and pain during menstruation. Where it exists, it is desirable that some laxative medicine such as compound liquorice powder or confection of senna should be taken nightly for two or three days before the period is expected. There is no objection to mild laxative medicines, such as those mentioned above, being taken even during the menstrual period, but it is well at that time to abstain from any violent purgative medicines, as they are somewhat apt to set up localised inflammation.

Caution.—Great discretion should be used in the **employment of stimulants** for the relief of pain during menstruation. While undoubtedly in many cases great relief is given by their employment, there is very considerable risk of the habit of taking stimulants being acquired, and preference should always be given to the application of poultices, or flannels wrung out of warm water, to rest, and to sedative medicines prescribed by the medical attendant. In a few cases where pain is excessive some local treatment to the womb during the intervals of menstruation may be necessary, but this should always be avoided if possible, and when considered requisite by the medical adviser, should always be carried out under an anæsthetic.

Mental Conditions.—Girls at this period of their life are somewhat prone to manifestations of slight mental and moral disorder. Various symptoms, comprehended under the general application of "hysteria"—such as unprovoked fits of laughing and crying, or attacks of seeming fainting and convulsions—not unfrequently present themselves, while motiveless acts of mischief, unnatural

cravings for abnormal food, and perverted moral ideas are occasionally met with. When phenomena such as these appear, much judgment as well as patience is required on the part of the natural guardian of the invalid. Supervision must be exercised, and proper moral principles inculcated, at the same time that the physical health is properly attended to. Judicious occupation, both for the mind and body, is essential, and care should be taken in the selection of healthy literature, as well as in the choice of suitable companions in recreation. It is at this age that morbid inclinations related to the development of sexual instincts occasionally occur, and a wise mother will always be particularly careful of the companions her daughters may choose at this anxious period of their life, and will cautiously avoid the possibility of their receiving contamination or injury from lax or improper associations.

Mothers should keep carefully in view the importance of preventing **too much brain-work** during this period. Valuable as is that higher education now offered to girls, it may be purchased in some cases at too dear a price. Let a mother see that her girls receive the true education, the "drawing out" of their mental faculties by gradual and healthy means, and let her discontinue everything that savours of "cramming."

The changes which have just been described as occurring at puberty in girls are completed usually in a comparatively short space of time. Very often in from three to six months an entire change both in figure and in character will be effected, and the girl becomes changed into the young woman.

In boys the change which occurs at puberty usually progresses much more gradually, and generally some years are requisite for the complete development of the boy into the young man. The age of puberty is reached by boys rather later than by girls. Most commonly it commences in boys at from fourteen to fifteen years of age. The most striking feature is the change in the tone of voice, which becomes of a deeper character; and this is accompanied by increased size of the larynx, where the voice is produced, and by projection of that part of the larynx known as "Adam's apple." The figure gradually becomes more manly, the chest becomes broader, and hair is developed in various parts of the body.

At this age boys are apt to manifest various *nervous derangements*, as well as slight mental peculiarities. Twitching of various muscles, both of the face and of other parts of the body, is common, and spasmodic winking is of frequent occurrence. Among mental eccentricities the most usual is bashfulness, accompanied by a tendency to blush on slight provocation; exceptional

sensitiveness and unwonted irritability of temper are also observed. The physical and mental alterations are coincident with, and in some manner related to, the development of the sexual function, and care in the selection of companions, and supervision as to the employment of leisure, are specially necessary at this stage of a boy's life. There is no doubt about the extreme value of **physical exercise** at this critical period; and the rule which exists at most public schools of compelling boys to take their part in foot-ball, cricket, and other exercises, unless specially exempted by medical order, is founded on a wise knowledge of the constitutional peculiarities of the age of puberty.

CHAPTER XII

GENERAL CARE OF THE CHILD.

WASHING OF BABY—TEMPERATURE OF WATER—SOAPS—USE OF OIL—ATTENTION TO CORD—DRESS—NECESSITY OF AVOIDING PRESSURE OR RESTRAINT—MATERIAL OF CLOTHING—DIAPERS—BASSINETTE—OBJECTION TO BABY SLEEPING WITH MOTHER—DESQUAMATION OF SKIN—RED-GUM—VALUE OF FRESH AIR—SUNSHINE—DAILY BATHS—VALUE OF DOUCHING—OUT-DOOR EXERCISE—CARRIAGE IN ARMS—BASSINETTE PERAMBULATORS—IMPORTANCE OF SUPPORT WHEN SITTING UP—WALKING IN OPEN AIR—CULTIVATION OF CLEANLY HABITS—SELECTION OF CLOTHING—UNRELIABLENESS OF CHILDREN'S SENSE OF TEMPERATURE—INDICATIONS OF INSUFFICIENT CLOTHING—CHANGE OF UNDERCLOTHING AT NIGHT—IMPORTANCE OF LOOSENESS OF CLOTHING.

Immediately after birth it is usual to wash the new-born infant carefully and thoroughly. For this purpose the infant bath described in Chapter VII. is very convenient; in its absence, an ordinary foot-bath or a large basin may be employed. The water used should be comfortably warm; an experienced nurse can decide by testing with her hand the proper temperature, but one not experienced would do well to make use of a bath thermometer, regulating the temperature of the water to 100° F. Any kind of good soap may be employed. Most nurses have their favourite soap, which they may have asked the mother to obtain beforehand, and the nurse's preference in this matter should be respected. For the first ablution after birth a small piece of new flannel answers better than a sponge; afterwards there is no objection to the use of a sponge in the daily bath of the infant. When the

skin is much covered with the white sebaceous matter referred to in the previous chapter, washing is facilitated by rubbing the child first all over with either lard or vaseline or olive oil, which is washed off afterwards with soap and warm water. In washing, special care should be taken to clean thoroughly the folds and hollows of the body, such as the armpits, the ears, the folds of the thighs, and behind the knees. If any sebaceous matter is left in these folds it is apt to decompose and set up irritation which may result in inflammation and even ulceration of the skin.

After being washed thoroughly the infant is dried carefully with a warm, soft towel, and then powdered with some harmless absorbent powder, such as powdered starch, violet powder, or fuller's earth.

Before commencing to dress the baby, some little attention has to be given to the part of the umbilical cord attached to the navel. It will be remembered that after the infant is born this cord is tied in two places and cut between the two ligatures, one part of the cord remaining attached to the child at the navel, and the other part connected with the after-birth. As the umbilical cord is of no utility after birth, it is usual to cut it within two or three inches of its attachment to the infant, leaving just enough of it to admit of its being tended properly until it drops off. This usually happens in about five days after birth. From the time the cord is cut it gradually shrinks and becomes drier, and begins to detach itself at its connection with the skin round the navel; and this process is usually completed in about five days, when the dry and stiffened cord falls off altogether. Sometimes, instead of becoming dry, it becomes soft and putrid, with a somewhat disagreeable smell. In such cases there is often a little unhealthy ulceration at the line of its separation from the skin, and there is sometimes left, after the cord has fallen off, a small ulcerating and projecting surface on the navel, discharging a thin unhealthy matter, and giving rise to a slight unpleasant odour.

The most important point with reference to the cord in a newborn infant is to be certain that it has been tied so efficiently as not to admit of any bleeding from its cut end. Sometimes a very thick cord may have been tied quite satisfactorily before being cut, but when cut may shrink so that the ligature becomes a little loose, and allows of some oozing of blood from the cut end. When there is any appearance of this there should be no hesitation in putting on another ligature at once. The cord apparently has no sensation, and a piece of tape or a few strands of silk thread or cotton may be tied as tightly as possible round it without the infliction of any pain upon the baby. It is not well to use a single thread or a piece

of thin twine for this purpose, as, when the cord is soft, it may be cut entirely through by the single thread, and bleeding again recur from the fresh wound. If twine is used at all, it should be of a soft and coarse kind. If there is no oozing from the end of the cord, it is dusted well with powder, and enfolded in a small piece of linen. The most convenient way of doing this is to take a piece of old linen (part of an old handkerchief does very well) about seven inches by four inches in size. In the middle of this a small hole about the size of a shilling is cut, the cord is drawn through this hole, and laid flat on the stomach of the child above the navel, with one layer of the linen below it, and the other covering it. The sides of the piece of linen are then enfolded over the cord, and the whole kept in its place by the flannel binder, which is put on loosely round the abdomen of the infant. The piece of linen ought to be changed every time that the child is bathed, great care being taken that no traction is made on the cord in bathing or drying the child. If the cord remains moist and becomes putrid, some antiseptic powder should be used in place of the starch or fuller's earth; equal parts of powdered boracic acid and oxide of zinc make a very satisfactory powder for this purpose. If there is any discharge from the navel after the separation of the cord, the small ulcerating surface which will come into view when the folds of the navel are stretched a little should be dusted twice daily with the antiseptic powder just mentioned; if, in the course of a week, it is not entirely well, the attention of the medical adviser should be called to it.

In dressing a baby it is most important that all its clothes should be perfectly loose. Some nurses have an idea that a baby requires external support from its clothes, and, accordingly, occasionally draw the binder so tightly that the infant is unable to breathe properly. This view is entirely erroneous, and the practice founded upon it very injurious. The two objects of the binder are to prevent the remnant of the cord from being injured by movement, and to maintain the warmth of the child, and both these objects are equally well effected by a loose binder.

As few pins as possible should be used in fastening the clothing of an infant, and these should invariably be safety pins. Where it can be done conveniently, stitching should always be employed in preference to pins.

Clothing: Warmth.—Consistently with warmth, the clothing of an infant should always be as light and as simple as possible, and should be porous, so as to admit of ventilation to the skin. Flannel and merino are the two materials which best fulfil these indications. Of the two, merino fulfils the indications best; the

Sanitary Woollen Clothing of Dr Jæger is admirable in this respect, but it is somewhat expensive, and more difficult to wash than flannel, which if good and pure is quite satisfactory.

It is important that the arms and neck of a baby should be properly clothed, as well as the body and legs. The arms and hands of an infant are particularly liable to cold, and when the circulation in the arms is impeded by chill, the digestion and the breathing are usually affected secondarily. Nurses and parents are apt to imagine that if the temperature of the room is comfortably warm, there is no risk of the arms or legs of a child being chilled when uncovered. It should be remembered, however, that while the temperature of even a warm room seldom exceeds 70° F., the temperature of an infant's body is about 98°·5 F., a difference of 28°. Many new-born infants, if not very robust, will show by blueness of the hands the effects of the arms being left uncovered even in a thoroughly warmed room. It has been already remarked that warmth is even more essential than food to the new-born child, and especially is this the case with infants who have been born somewhat prematurely. Often their one chance of life depends upon the attention given to maintain their temperature. So important is this that when a child is born during the seventh or eighth month of pregnancy, and seems very feeble, it is usual for some days, or even longer, to omit altogether the processes of washing and dressing, and to keep the infant simply rolled in sheets of cotton wool, with nothing except its face exposed to the external atmosphere. A feeble infant will often make progress in this way, the cotton wool being changed as frequently as is necessary to maintain cleanliness.

A new-born infant is of course unable to let it be known when it is about to pass water, or when its bowels are about to act; and provision is made to prevent the soiling of its clothes by these actions in the form of *diapers* which are pinned or tied on to receive the discharges. Those diapers ought to be soft and as absorbent as possible, without being too cumbrous or warm. The best material for them is Turkish towelling; but ordinary linen or flannel is often employed for the purpose. Sheets of absorbent cotton wool, incased in gauze, have recently been introduced as substitutes for diapers; they are convenient, but occasionally are objectionable as maintaining too much heat. Diapers must be changed as often as is necessary by the frequency of micturition and the action of the bowels; they should never be allowed to remain on a baby when wet or dirty. Nurses are occasionally careless in this respect, and the neglect results in redness and irritation of the thighs and abdomen of the child, and in consider-

able discomfort. This redness and irritation is not unfrequently attributed to improper washing of the diapers with soda or other irritant, but the explanation in the vast majority of instances, if not invariably, is negligence in changing as frequently as necessary. In some cases it is true that an irritating condition of the urine or the fæces will conduce very much to the production of this inflammation; but the irritating secretions ought not to be allowed to remain in contact with the skin long enough to do much injury.

Waterproof sheeting ought never to be applied external to the diapers; it is injurious to the child in preventing the cutaneous respiration, and acting as a continuous poultice; and is only of use in concealing the necessity for frequent changing, and thus covering the laxness of a careless nurse.

The Cradle.—Every baby should have a cradle or bassinette for itself, and should not be put to sleep at night by the side of its mother. During the day there is not the same objection to the baby lying at the side of its convalescing mother. At that time she is awake, and able to see that the child lies comfortably, that it gets pure air to breathe, and that it is nursed only at proper intervals. At night, on the other hand, the mother ought to be asleep, and if so is unable to attend properly to the wants of the child. It may thus have its head covered with blankets, and breathe all through the night impure air saturated with secretions from its mother's body; or it may be turned round accidentally with its face downwards, and be suffocated from inability to breathe properly. Another objection to babies sleeping in the same bed with their mothers is that they thus acquire bad habits of nursing. When put to the breast, instead of exhausting it properly and completing its meal, the baby is apt, when allowed to lie all night with its mother, to play with the breast, taking a little milk occasionally, then stopping for a while, and again resuming the process of sucking. Often it will continue this for the greater part of the night, soon acquiring the habit of continuing to suck even when more than half asleep. In this way it obtains more milk than is good for it, deranges its digestion, and at the same time unduly exhausts its mother, who wakens in the morning unrefreshed and wearied. When, on the other hand, the baby sleeps in its own cradle, it is taken to its mother when it cries for food, exhausts the breast, is replaced in its cradle, and sleeps quietly until again awakened by the cravings of hunger. It is only when a baby is very feeble and in great want of warmth that it is right to allow it to share its mother's bed. In such cases the animal warmth of the mother is very valuable, and she soon instinctively

acquires the faculty of taking care of the infant even during her sleep, often sleeping for hours at a time, with the infant in her arms, without making any alteration in her position to the injury of the child. Here the risk of the infant acquiring bad habits of nursing does not present itself, as feeble infants seldom or never exceed in the amount of milk they draw from the breast; the difficulty is usually the opposite one of inducing them to take enough, and the importance of warmth so transcends any other requirement that everything else has to be sacrificed for that one object.

The Skin.—During the first few weeks of life *every baby sheds its external skin*. Sometimes this process of desquamation, as it is called, is effected rapidly, the skin coming off in large scales, or even in shreds, and the shedding being completed within less than a week from its commencement. In other cases the desquamation progresses slowly and almost invisibly, only a little roughness of the skin being occasionally noted, and perhaps a few loose scales detected here and there. Not unfrequently some irritation of the skin accompanies the desquamation, and it may be characterised by small red pimples scattered over the body, to which the name of *red gum* is usually applied. In cases of rapid desquamation little patches of old skin sometimes become elevated so as to resemble vesicles, containing occasionally a little fluid, just like the vesicles of chicken-pox. This irritation of the skin seldom is sufficiently serious to call for any attention. A little additional care in drying the child, so that the towel may not irritate any pimples or vesicles, is desirable, but beyond that nothing is necessary, and it will be invariably found that the eruption subsides after a few days, and leaves the new skin soft and smooth underneath.

Value of Fresh Air.—In addition to warmth, young infants, even more than older children, are very dependent for their health and growth upon a proper supply of fresh air. Even in strong children the power of breathing deeply is comparatively feeble in very early life, and it is most important that the air they inhale in breathing should be the purest obtainable. If the bodies of babies are kept thoroughly warm, there is very little risk of their catching cold from inspiring cold air. Healthy babies naturally breathe always through the nose, keeping their mouths shut, and cold air is warmed by contact with the interior of the nose before it reaches the more sensitive linings of the throat and bronchial tubes. Even in winter a strong baby can be safely taken out of doors in the arms of its nurse within three or four weeks of its birth if the weather is bright and free from cold or damp winds. It is usual and judicious at first to accustom the baby to changes of temperature by taking it from one room to another; and when

it has been thus used to comparatively slight changes, it may be taken out of doors for a short period at a time. It is important to note that it is much more the duration of exposure to cold than the intensity of cold which is likely to injure a young infant. All babies, even weakly ones, have a certain power of resisting the influence of cold, but when the power is feeble it is very early exhausted, and then bad results ensue. Exposure to cold air in babies has much the same effect on them as indulgence in cold baths on adults. While a short exposure is stimulating and healthful in its effects, prolonged exposure to cold is followed by depression, coldness of the extremities, and tendency to catarrh of the bronchial tubes or of the stomach and bowels. The effects of cold air must be watched by the nurse or mother when carrying the infant, and it must be taken indoors when the hands or feet are felt to be in the least chilly. When due regard is paid to the maintenance of warmth, nothing is more beneficial to young children than regular exposure to the open air. The appetite is found to increase and the colour of the infant to improve, more rapid progress is made in growth, and the sleep at night is better and less disturbed.

After the first few days of life a baby of normal strength may be carried from one room to another; and in summer, when from a week to a fortnight old, may be taken into the open air for fifteen or twenty minutes at a time. In winter it is generally safer to keep the baby indoors until it has attained the age of three weeks to a month, and then to take it outdoors only when the weather is fine, and when there is not much wind. After the outdoor exercise has once been commenced, it should be continued as regularly as the weather will permit, the duration of the exposure to the open air being gradually increased until the baby spends three or four hours daily or even more in the fresh external air. For the first three months of their life, at least, babies ought to be carried in the arms of their mother or nurse when taken out. They are more comfortable in the support given them by the arms of the person carrying them than they can be in any perambulator, and they have the great additional advantage of being kept warm by the close contact with another human body. It is, however, now usual to put them into bassinet perambulators when they have attained the age of about three months. A bassinet perambulator is not in any way objectionable for a young baby, if due care be taken that it lies properly in it, and that it is maintained in due warmth. The advantage of the nurse's arms is that there more stimulus is given to the muscular system of the infant, and its growth is thereby promoted. But a baby generally is carried about sufficiently within the house to gain advantage in this way;

and the bassinet perambulator, on the other hand, has the merit of allowing the infant to be longer in the open air, as the nurse does not become fatigued in wheeling it as she does when carrying the child in her arms.

Bassinet perambulators are usually constructed with a well in the centre, covered over with a padded board. When the baby reaches the age of six to eight months, it will probably object to the horizontal position, and the board will have to be removed to allow of the child sitting up. When this stage is attained, care must be taken that the back is properly supported, cushions being used for that purpose when necessary, and that the feet are kept warm, and have something to rest on if the well is too deep for them to reach to the floor. The baby should also be supported at the side, if the perambulator is a wide one, so as not to put any undue strain upon the still rather weak muscles of the back. When the child has attained the faculty of walking fairly well, perhaps about the age of eighteen months, it should be taken out of its perambulator for a short time every day, and permitted to walk a little in the open air. Gradually the length of the walk may be increased, and when the child has arrived at the age of two and a half to three years, the perambulator may be dispensed with entirely. It is not well, however, to dispense with this means of locomotion too early. It is most important that the young child should spend a considerable part of its time in the open air, but at the same time it is of equal importance that it should not be unduly fatigued by walking, and the perambulator should accordingly be used until the walking powers are fairly matured. It will often be found advisable to allow the child for some time to walk during the forenoon, and to be driven in the perambulator in the afternoon, before discarding its use altogether. As an aid to outdoor exercise, the recently introduced children's mail-carts are of much value, but they are unsuitable for children under the age of one year.

Value of Sunshine.—Another important element in promoting the vigour of the young infant is a due amount of sunshine. So far as possible, the room in which the baby spends the greater part of its time should be one which admits as much sunlight as possible. The influence of the sun, in whatever way it may act, is as beneficial to the life of an infant as it is necessary to the life of most plants. It is erroneous to suppose that the eyes of a baby may be injured by exposure to bright light. As soon as a baby is old enough to express pleasure by signs, it will show its appreciation of brightness, and its eyes are certainly not more sensitive than the eyes of any ordinary adult, or more likely to be injured by sunlight.

The Bath.—For the first two or three months of a baby's life it should be bathed **night and morning** in water of the temperature of 100° F. After it has attained the age of three months, the morning bath should be cooled gradually, reducing it by about 5° F. weekly, until a temperature of 70° F. is attained. In winter the temperature of the bath should not be reduced below this degree, but in summer it may be reduced until a quite cold bath is given, which in summer represents a temperature of about 55° F. to 60° F. Some attention must be paid to the predilections of the baby in the matter. Some babies enjoy thoroughly the coolness of the bath, and are obviously made brighter and benefited by it; others again resent the diminished temperature, and cry when put into it. When this occurs, the temperature must be raised again to that preferred by the infant, and more gradual attempts made to slowly diminish it. Sometimes, if a baby resents any diminution in the temperature of the bath, it will not object to a little *douching* with cooler water when sitting in the warm water. This douching has a very stimulating effect, and is very simply carried out. As the baby sits in its bath, the nurse pours some cool water from a jug held in her hand down the back of the child, letting it fall just below the neck and run downwards into the bath. As the baby becomes somewhat accustomed to it, the jug is held somewhat higher; and if at first tepid water is used, and gradually day by day more cold water is added until water entirely cold is employed for the douche, and the height at which the jug is held gradually increased, a baby will be found to thoroughly enjoy a cold douche on its back from a height of two or three feet. The great art in inducing babies to undergo the little shock involved in entering a cold bath or in being douched is never under any circumstances to frighten or startle them. Everything must be done gently, quietly, and gradually; and a baby five to six months old can easily be led to regard the whole process as a part of its daily amusement. The tepid or cold douche can often be used with advantage to babies who are not strong enough to bear a cold bath, and it may be continued throughout the whole winter, as well as in the summer. The evening bath should always be a comparatively warm one, although it is not necessary to maintain it at the temperature used immediately after birth. Speaking generally, it should not be allowed to fall below a temperature of 85° F., while 90° F. to 95° F. will usually be more eligible. The exact temperature should be decided mainly by the influence the bath may have in inducing quiet sleep. It is well to continue both the morning and evening baths during the first few years of life. After a few years the evening bath may be

given up, but the morning one it is best to adhere to through life.

Cleanly Habits.—It is very important for the comfort both of the mother and the child to inculcate as early as possible the **propriety of cleanly habits**. For the first two or three months of life the baby discharges the excretions from the kidneys and bowels almost involuntarily, and gives no indication when these discharges are about to occur. For this reason it is necessary always to have a diaper adjusted to receive them. After the first two or three months the infant is conscious of their occurrence, and the mother or nurse should attempt to associate it regularly, morning and evening, and at other times, in the baby's mind with some sound.

When the association has been fully perceived by the infant, it will soon progress a step further, and give notice to the mother or nurse when an action is about to take place, by making the same sound itself. For the first few months of life the voluntary control of the actions of micturition and defæcation is feeble, but this control is increased and educated by the child itself when it learns to give notice of its desire for relief. Children vary much in the rapidity with which they learn this important lesson, but it is not at all unusual to find children of only six months old who can be safely left without any diaper during the whole day. At night the sensitiveness of the child to warnings is diminished, and it is usually necessary to continue the employment of diapers throughout the night during at least the whole of the first year of life. After six months of age, the infant, instead of being held out by the nurse, can be placed upon a low night-stool, night and morning, supported, if necessary at first, by its nurse. The encouragement thus given to one or more daily actions of the bowels at regular hours induces a habit which is of much value in maintaining the health in later years. The solicitation of an action of bowels in this way should be continued daily throughout childhood, and should be attended to as nearly as possible at the same hour every morning, and due care should be taken that a sufficient time is allotted to the purpose.

In the Selection of Clothing for Older Children three points ought to be kept in view: the first that the clothes are of such material and shape as to fulfil well their function of keeping the body, and more especially the arms and legs, warm; the second, that they interfere as little as possible with freedom of movement; and the third, that they are as light as possible in weight consistently with fulfilling their first and most important end. For both night and day wear the garments next the skin should be

of soft, porous, and absorbent material, and should be capable of being washed frequently without injury to the texture. The materials which answer these conditions best are merino, flannel, and woven silk, the first named being the preferable. No underclothing for day use is so satisfactory for children as merino combinations, which should always have long arms reaching to the wrists, high necks, and legs coming down below the knees in winter, and reaching almost to the knees in summer. These combinations are now made in varying thicknesses of merino, and in all sizes, from those suitable to children of a year old to those intended for adults; they are not expensive, and, if the material is good, they last well when properly taken care of. With underclothing of this kind, and of a thickness suitable to the season and prevailing temperature, almost any variation may be made in the external clothing according to the taste of the mother without risk from cold. In judging of the sufficiency of a child's clothing, very little reliance can be placed on its own sensations, and the mother must judge for herself by the temperature of the hands and feet of the child. It is rare for a healthy child to complain of cold even when suffering much from insufficient clothing; but if a child in good health comes in from a walk or from a ride in a perambulator with hands and feet cold and pale or blue on the surface, it may be assumed that in some particular direction the clothing is insufficient, and most often it will be found to be the covering of the arms or of the legs which is deficient. Very frequently the arms and legs will be found cold when the body is quite warm, but the body will never be observed to be cold when the arms and legs are warm. The influence of cold of the extremities in affecting adversely the digestion has already been referred to, and many of the other catarrhal troubles of childhood flow from the same cause. A very common mistake made in this country is to assume that there is no risk of a child suffering from cold when indoors. Many parents who take the greatest care to clothe their children warmly when going out of doors allow them when indoors to have both arms and legs uncovered, and to be insufficiently clothed in other respects. With a changeable climate like that of England, there is considerable risk in doing this, unless the temperature of the inhabited rooms is carefully regulated. Many cases of depressed health in children without any very defined cause are due to the influence of cold from insufficient clothing, and it is probable that the great frequency of rheumatism in children in this country is due much more to the depressing effect of insufficient clothing, acting through a long period of time, than to the occasional exposure to severe chill.

For the night wear of children flannel night-dresses are very suitable, and are perhaps more convenient than merino combinations. Merino night-dresses also have been introduced within late years, and are exceedingly comfortable and warm. Young children are very apt to kick their legs out of the night-dress during sleep, and run a risk of chill in this way; in order to prevent this, it is often well to have the flannel or merino night-dress made about a foot longer than the child, and to double the bottom over, and pin it with a safety-pin when the child lies down in bed, thus enclosing the feet as it were in a bag.

It is almost needless to add that no child should ever wear the same clothes next the skin during the night which it has worn during the previous day. When confined to bed by illness, the night-dress should always be changed night and morning, and should always be well aired before being put on, in winter in front of a fire, and in summer by being hung up in a dry and airy room.

Children now practically never wear night-caps, although forty years ago their use was universal; and they never suffer in any way from their absence. This is due to the fact that the strength of the circulation in the head is greater than in any other part of the body. Cold *in* the head is never due to cold *on* the head; it is invariably the result of chill in some other region.

Caution.—Care should be taken that *the clothes of children never press unduly* on any part of the body so as to interfere with the respiration or circulation. Pressure on the waists of children must be especially avoided, and all weight of clothes should be borne by the shoulders, being supported either by braces or by loose stays attached to shoulder bands. Garters to support stockings exercise an injurious influence on the circulation of the legs; stockings ought to be supported by elastic suspenders, attached at their upper end to stays supported from the shoulders, or to a very loose waist-belt.

The same principles which have been mentioned in reference to the clothing of children are equally applicable to the dress of later youth. In girls merino combinations should be worn during the day throughout the period of puberty, an age at which any insufficiency of clothing is apt to have specially prejudicial results. Flannel or merino should also be employed for the night-dress. In boys, during the day, merino jerseys and pants may be substituted for combinations; and for clothing during the night by far the most eligible is the costume so universally used in the East by Europeans, consisting of thin flannel pyjamas and light flannel coat.

Some attention should be given to the boots and shoes worn by children after they commence to walk. If their feet are to

develop well, it is important that they should not be compressed in any direction by their coverings. Many bootmakers invariably measure the feet when suspended in the air, overlooking the fact that when the foot is pressed on the ground it expands considerably in width. The result is that the boot is made too narrow in the sole, and the foot is compressed laterally, and consequently loses much of its elasticity. A boot or shoe should always be made wide enough in the sole to allow the foot to expand to its full extent without incurring any lateral compression. If this is not attended to, not only do corns develop, but the toes become compressed and crowded, and a bad style of walking is acquired. A similar result follows the wearing of inordinately high heels, which cause the foot to slip forwards within the boot, resulting in compression and malformation of the toes. The interior of a boot or shoe should conform to the natural sole of the foot, and the surface for the heel should be on a level with the surface for the ball of the great toe. If this and the due breadth are attended to, it is a matter of small importance whether a shoe or a boot is worn, or whether the boot be laced, buttoned, or spring-sided. When spring sides are used, however, care should be taken that the pressure is not great, and that it is equally distributed over the foot, not concentrated in a ring round the ankle.

CHAPTER XIII.

THE NUTRITION OF THE CHILD

MOTHER'S MILK THE NATURAL FOOD—TEMPORARY SUBSTITUTE WHEN NECESSARY—DIFFICULTIES OF SUCKING—FREQUENCY—AMOUNT OF MILK OBTAINED—USE OF ONE OR BOTH BREASTS—INDICATIONS OF DISCOMFORT FROM EXCESS OF MILK TAKEN—PROGRESS OF NATURAL NURSING—INSUFFICIENCY OF SUPPLY OF MILK—NECESSITY OF ARTIFICIAL SUPPLEMENT—ELIGIBLE SUBSTITUTES—USE OF FEEDING-BOTTLE—TEMPERATURE OF ARTIFICIAL FOOD—FARINACEOUS FOODS—SELECTION—QUANTITY TO BE GIVEN—OCCASIONAL INABILITY TO DIGEST DILUTED COW'S MILK—ALTERNATIVES—MILK HUMANIZED—STERILIZED—PEPTONIZED—ASSES' MILK—GOATS' MILK—WET NURSE—ADDITION OF FARINACEOUS FOOD—FEEDING BY SPOON—ADDITION OF ANIMAL FOOD—OBJECTIONS TO NERVE STIMULANTS—COMMON ERRORS IN DIET OF INFANTS—DEFICIENCY OF FAT—EXCESS OF FARINACEOUS FOOD—EXCESS OF NITROGENOUS FOOD—IRRITABILITY OF DIGESTIVE ORGANS IN CHILDREN.

The natural food for a young infant is the milk secreted in the breasts of its mother. This secretion is generally present in

small quantity at the time of the birth of the child, but is not usually found in abundance until a day or two after that event. During the first one or two days of its life the baby may thus appear to have an insufficient supply of milk; in some cases, indeed, the supply may be entirely absent for some time after birth, not appearing until the fulness and distension of the breasts described in Chapter X. have developed on the second or third day after parturition. However little milk there may appear to be in the breasts immediately after the birth of the infant, it is always well that it should be induced to avail itself of what is present. The early secretion of the breasts after confinement has a peculiar purgative action on the child, which promotes the discharge of the contents of the bowel known as *meconium*, and prepares the alimentary canal for the due digestion of the normal milk which succeeds in due time the first secretion. The sucking action of the infant also acts as a stimulus to the lacteal glands of the mother, while, at the same time, her nipples are drawn out and made more easily available for the future demands of the child. Unless an infant is very wakeful and fretful during the first one or two days of life, it is not desirable, and certainly it is not necessary, to give it any food beyond what it is able to extract from its mother's breasts. There is not the slightest risk of the baby suffering in any way from starvation, even if it has to wait two or three days for an ample secretion of milk; and it will digest and utilize its mother's milk to greater advantage when the flow does come, if its stomach has not been irritated in any way by the administration of artificial food in the interval of waiting.

Temporary Substitute.—When, however, fretfulness, wakefulness, and apparent hunger, indicated by ravenous suction at the breasts, indicate the propriety of temporary satisfying the wants of the child, the most appropriate food is *sterilized* milk diluted with water to the extent of double the quantity of the milk, and slightly sweetened with white sugar or sugar of milk. This should be administered either by means of a spoon or from a bottle, and should be given in quantities of not more than two tablespoonfuls (one fluid ounce) at a time, and not more frequently than every two hours. As soon as there are indications that the breasts are secreting satisfactorily, the artificial feeding should cease at once. These indications will be found in the fulness and hardness of the breasts, in the discharge of milk from the nipples, and in the facility with which slight pressure on the breasts will cause a flow from the nipple.

Difficulties of Sucking.—Considerable difficulty is sometimes experienced in inducing the baby to suck the breasts properly,

more especially when the milk is rather difficult to extract, or when it has been fed artificially for two or three days from a bottle, from which it is considerably easier to extract the milk than from its mother's breast. Breasts vary considerably both in the form of the nipple and in the facility with which the milk flows from the ducts, even when the quantity may be plentiful. The baby must in cases of difficulty be induced to suck properly and strongly, in the first place by the stimulus of hunger, and in the second place, when necessitated by the want of projection of the nipple, by the assistance of artificial nipples, and by the pressure of the hand of the mother or nurse upon the breast. In Chapter X. a description has been given of the kind of artificial nipple which should be used for this purpose, together with directions for its employment. In all cases where undue difficulty presents itself in sucking, and where this difficulty is not apparently owing to any deficiency in the supply of milk, or any want of projection or malformation of the nipple, a careful examination should be made of the mouth and tongue and nose of the infant. Children are occasionally born with a perforation in the roof of the mouth communicating with the nose, and when this is present suction becomes impossible without some artificial aid. It is very seldom indeed that the abnormal connection of the under side of the tongue with the floor of the mouth, known as "tongue-tying," exists to such an extent as to limit very materially the capacity for suction; but when other difficulties are present, it may add to them, and accordingly call for remedy by a slight and unimportant incision. Catarrh of the nose interferes very seriously with the power of sucking strongly, and when present may call for a considerable amount of attention. It is only after exhausting all possible sources of difficulty that one is entitled to assume that the infant has a dislike to the milk of the mother, and must be humoured by being fed in some artificial manner.

Frequency of Suckling.—A recently-born infant usually requires nursing at intervals of about two hours during the day, and of about three hours during the night. This will give an average of nine or ten administrations of food in the twenty-four hours. At each of those times it will probably receive from one or two fluid ounces of milk, which will amount to between half a pint and a pint in the whole day and night. Experiment and observation have shown that the average capacity of an infant's stomach at birth is about one fluid ounce, but, being elastic, the stomach is capable of some distension beyond this; and when the supply of milk is abundant, strong babies almost invariably exhaust from the breast somewhat more than they can comfortably digest and absorb.

The secretion of milk by the breasts of the mother varies somewhat with the frequency with which it is exhausted ; on an average, it usually amounts to quite a pint in the twenty-four hours, and may attain to double that amount. When excessive calls are made on the breasts, however, either by the voracity of one strong infant, or by the attempt to suckle two together, the milk is apt to degenerate considerably in quality.

When the supply of milk is good, it is usually sufficient to give only one breast to the young infant at each time of nursing ; and by alternating the breasts at successive meals a longer period of rest is given to the nipple, and a somewhat less tax is imposed on the health of the mother. On this point also reference may be made to Chapter X.

Difficulties of Digestion.—When the baby has taken more milk than it can comfortably accommodate, it shows immediately after the nursing is completed signs of uneasiness and fretfulness. These may be accompanied by slight eructations of wind, and are generally followed by vomiting of the excess of milk, after which rest and comfort ensue. In young infants the act of vomiting is not in any degree the painful process which it invariably is when occurring in adults. Rather is it a gentle emptying of superfluous contents without any uncomfortable exertion, and without any subsequent depression. The sensation of nausea appears not to affect babies ; before the stomach is relieved they seem to have no discomfort beyond the sense of distension, and after the relief from partial evacuation of the contents, they are usually perfectly happy, and settle down to the digestion of what remains with a sense of placid well-being.

When sickness in babies is due only to an overcharged stomach, the milk vomited has a perfectly fresh odour, and is little if at all curdled. When the cause of the sickness, on the other hand, is irritability of the stomach, or some change in the quality of the milk, making it more difficult of digestion, the vomiting usually occurs some time after the ingestion of the food, and the vomited matter has a sour, unpleasant smell, and is usually markedly curdled. When this is noticed, attention must be directed to the general health of the mother, and to the possibility of her having taken any food or medicine likely to prove injurious to the quality of the milk. In the vast majority of cases of irritability of digestion in young infants nursed exclusively by their mothers, some local or general cause affecting the condition of the milk will be discovered. In some cases it may be traced to some unwonted food partaken of by the mother ; in others to some local irritable condition of the breast ; and in others, again, to general disorder

of the mother's health, such as results from a feverish attack, or from the recommencement of the menstrual flow. Whatever the cause may be found to be, treatment must be directed to remove it. It is useless and absurd to direct treatment to the digestion of the baby so long as the cause persists which has initiated the disorder, and continues to aggravate it.

Another important indication of the suitability of the milk to the infant is found in the character of the motions passed from the bowel. When the digestion is healthy, even though the stomach be occasionally overcharged with food, the motions will be observed uniform in character and consistency, and of a healthy yellow colour. When the digestion is impaired, and the digestive canal irritated, the motions will usually become of a pale colour, undigested curdled masses of milk will be found mixed with the usual faecal matter, and often a considerable quantity of greenish gelatinous matter, known as mucus, will be mixed with the motion. If the irritation be considerable, the motion may not unfrequently be seen to consist almost entirely of this greenish mucus, with which occasionally will be mixed fragments of curdled milk. When the motions become thus unhealthy and abnormal in character, they form conclusive evidence of some disorder of digestion, and attention should be at once directed to discover and eliminate the cause of the derangement.

Gradual Decrease in Frequency.—When the baby attains the age of two to three months, the intervals between the periods of nursing should be somewhat lengthened, more especially at night. At this age an infant should not generally be given the breast oftener than every two and a half hours during the day, and may even wait for three hours, while, during the night, an interval of between three and four hours between the periods of nursing may be attained. The capacity of the stomach has now considerably increased, and the infant is able to retain from twice to three times as much milk as it could do immediately after birth. In the case of children of normal strength, it is always well to make the intervals between the periods of nursing as long as possible. The infant in this way manages to complete thoroughly the digestion of one meal before commencing another, and the risk of irritation is very much diminished, while the mother escapes harassing frequency of nursing, and is not exhausted so much by her maternal duties. More especially should the night intervals be lengthened to the utmost extent, in order to allow the mother as much undisturbed sleep as possible.

At the age of five to six months many babies will allow of an interval of fully three hours during the day, while at night they

will be satisfied by being nursed when the mother retires to rest, and once again between five and six in the morning. At this stage a baby who is being exclusively nursed by its mother will probably remain until weaned.

Insufficiency of Supply of Milk.—Not unfrequently it happens that while the breasts of the mother secrete a certain quantity of milk after confinement, this is not sufficient to satisfy the wants of the infant. It may be observed that the baby continues to suck after all the milk has been exhausted, or, finding the supply at an end, it may leave off hungry and dissatisfied, and desirous of more food after a very short interval. It will usually be remarked in such cases that the baby does not progress with normal rapidity, and if the breasts of the mother be examined immediately before nursing, they will be found wanting in the fulness and tension of breasts which are duly charged with milk. When this condition occurs, it is necessary at once to supplement the mother's milk by some artificial food. Suckling by the mother should not be stopped entirely if the milk agrees with the child, and is deficient only in quantity, but a longer interval between the acts of nursing must be allowed to admit of the breasts becoming more full, and in the intervals between the periods of nursing some substitute for the mother's milk must be provided.

Fresh Cow's Milk diluted with two or three times its bulk of water, and slightly sweetened, will be found, as a rule, the most satisfactory substitute for the mother's milk, when arrangements can be made to obtain a regular supply two or three times daily of fresh milk from the same cow, and reliance can be placed on its purity. It is found generally that when fresh cow's milk is employed as the food of young infants, it is more easily digested if the milk be always obtained from the same cow, the stomachs of infants being sensitive to minute alterations in the character of the milk which cannot be discovered by any process of examination or analysis. An infant's stomach will also detect slight sourness in the milk long before it becomes apparent to the taste or other senses of an adult, and will resent the sourness by ejecting the milk, so that it is most important, more especially in summer, that the cow's milk should be obtained fresh two or three times a day. Milk, if boiled when fresh, does not turn sour so quickly as unboiled milk, and the freshness can be maintained also for some time by the addition of a small quantity of bicarbonate of soda to the new milk, about ten grains of bicarbonate of soda (as much as can be heaped on a sixpence) being used for a pint of milk.

These methods of keeping milk fresh are not, however, perfectly

satisfactory, as the boiling somewhat alters the character of the milk and makes it a little more difficult of digestion, while the quantity of bicarbonate of soda used, if its employment is continued for a time, may weaken to some extent the digestion of the infant.

Condensed Cow's Milk.—When difficulty is experienced in obtaining fresh milk for the diet of the child, it is better to resort to the use of condensed milk, and if one particular brand be adhered to, the milk is usually so uniform in character that the infant's stomach discovers no difference in quality in the successive tins opened. Condensed milk is simply cow's milk which has been for some time exposed to a temperature equal to that of boiling water, for the purpose in the first place of destroying any germs which may give rise to decomposition, and in the second place of concentrating its strength by evaporating the water in it; and which has then been enclosed in air-tight tins. In some brands a certain amount of sugar is added to facilitate the preservation; in others this is omitted, and the milk is sold under the name of "unsweetened" condensed milk. Generally speaking, the unsweetened is now preferred to that with sugar added; but both seem to agree equally well with many babies; and perhaps the only advantage which the unsweetened has over the sweetened is, that it keeps fresh after the air-tight tin has been opened for a somewhat longer period. The difficulty of keeping the milk fresh after a tin has been opened is the main drawback to the use of condensed milk. Otherwise it is a very eligible food for infants, as decomposition is obviated by the exposure to heat, while its digestibility has not been impaired by boiling. It would be of much advantage if it were put up in much smaller tins than it is usually stored in, so that a fresh tin might be opened at least once every day. In diluting fresh cow's milk or condensed milk, water which has been boiled should always be employed, and the addition of a little sugar of milk may be necessary to induce the baby to take it readily, as cow's milk diluted to the extent mentioned above is not nearly so sweet as the milk of the mother.

Necessity for Dilution.—Cow's milk, whether fresh or condensed, **is not so easily digested** as mother's milk. When the digestion of mother's milk commences in the stomach, it is altered into small soft particles of curd, which are easily permeated by the gastric juice, and reduced again to a uniform solution capable of being absorbed by the walls of the stomach and intestines. Cow's milk, on the other hand, curdles in the stomach into somewhat hard and large masses, which resist the action of the gastric juice, and are apt occasionally to irritate the walls of the stomach and produce pain. The object of the dilution which has been recommended is

mainly to prevent this curdling, or at least to reduce the size of the masses of curd, and diminish their hardness so far as to allow of the gastric juice exercising satisfactorily upon them its digestive influence. To chemical analysis the milk of cows is not very much richer than human milk, and very little dilution would be required to render it acceptable to babies if it were not for its tendency to coagulate in hard masses. The prevention of this is even more effectively carried out if thin barley water is used for dilution in place of simple boiled water. Barley water employed for this purpose should be made from ordinary pearl barley, about a full teaspoonful of which should be washed, and then boiled for twenty minutes in a pint of water. When this has been strained and allowed to cool it is ready for mixing with the milk. Barley water does not keep long without deterioration; a fresh supply should therefore be made daily.

Cow's milk is usually somewhat more acid than human milk, and when indications are given by the infant vomiting milk with a very acid smell soon after drinking the diluted cow's milk that the acidity is creating irritation, it should be neutralized by the addition of some lime water, or a little bicarbonate of soda. If lime water is used, it should replace one half of the water or barley water employed to mix with the milk; if bicarbonate of soda is preferred, about as much as will lie on a threepenny bit may be added to each meal. Lime water should usually be preferred when there is a tendency to relaxation of the bowels; bicarbonate of soda when the baby inclines to constipation.

Condensed milk does not usually curdle in such hard or large masses as fresh cow's milk, and accordingly does not require to be diluted to a proportionate extent; but it must be remembered that it requires the addition of a considerable amount of water to replace what has been evaporated in the preparation, so as to restore it to the condition of undiluted fresh milk. How much this replacing dilution must be is generally stated on the outside of the tins in which the milk is stored; it differs a good deal in different brands of condensed milk. As a rule, condensed milk, like fresh cow's milk, will be found to digest better when diluted with barley water than with plain boiled water; and in using it also the addition of an alkali, either lime water or bicarbonate of soda, may be necessary.

Feeding-bottles.—When artificial food is given to young infants, it ought to be administered through a proper feeding-bottle, from which the baby can suck the milk, just as it does from its mother's breast. Bottles are made of various designs by different makers, and their merits are urged on various grounds. By far the most

important quality of an infant's feeding-bottle is, that it should be of such shape and construction as to admit of **thorough cleanliness**. All other characteristics of bottles are simply questions of convenience; cleanliness is a matter of vital importance.

Generally speaking, the simpler the construction of a bottle, the more easy to keep it thoroughly clean. The ideal bottle is one made entirely of glass, except the nipple, which should be of india-rubber easily detached from the bottle, and easily replaced. There should be no corners in it, and a simple opening at one part to allow the milk to be poured in, closed with a glass stopper, with a groove in it, which should be able to be turned so as to admit a little air as the baby exhausts the milk. India-rubber tubing connecting the bottle with the nipple should not be made use of. It is exceedingly difficult to keep perfectly clean, and as the inside of it cannot be thoroughly inspected, it is impossible to be satisfied of its absolute freedom from impure matter. It also affords undesirable opportunities for the mother or nurse neglecting the infant during the process of feeding, as with the tubing the bottle may be placed in any position while the baby exhausts it through the tube. In such an important matter as feeding a baby, individual attention should be given by the nurse or mother to the process, and the bottle should be held in the hand of the administrator until the infant has satisfied its wants. The bottle should then be washed out as soon as possible with hot water, the india-rubber nipple having been first removed, and should be left lying in clean water until again required. When necessary, a little soda may be added to the hot water used for washing the bottle, if there is any difficulty in making it thoroughly clean. The india-rubber nipple should be washed carefully with cold water in which a little boracic acid has been dissolved; about a teaspoonful of boracic acid to half a pint of water makes a convenient solution for this purpose. After being washed carefully, the nipple may be replaced on the bottle. In order to obviate any possibility of the baby sucking the nipple off the bottle and swallowing it, it is usual to surround it with a flat ivory collar, which rests against the outside of the lips when the baby is being fed, and prevents the nipple from being drawn too far into the mouth.

Temperature of Artificial Food.—Artificial food given to young infants should **always be warmed** to a temperature approaching that of the body. It is best to ascertain this by the use of a clinical thermometer, such as is described in Chapter XVI., the temperature of the food being regulated by its use so as not to exceed 98° F., and not to fall below 90° F. Many nurses judge of the temperature of the food by tasting it, and a careful nurse

is not likely to make any mistake if she takes this precaution before administering the food, but the application of the thermometer is so simple and occupies so little time that it is always best to make use of it in preparing the meals of very young infants. Bottles have recently been introduced fitted with thermometers for this purpose ; they are convenient in use, but somewhat liable to breakage.

During the first three months of life it is best not to use any food except the preparations of milk already described, or the others to be mentioned later, in supplement of the milk of the mother. After this age, if the baby is making satisfactory progress, a little *farinaceous food* of some kind may be given.

Farinaceous Foods may be classified under three heads : those which have not been subjected to any special preparation, those which have been already partially cooked, and those that have been malted, or partially predigested in some other manner. Of the first the most commonly used are fine oatmeal, Robinson's groats, hominy, corn-flour, and arrowroot. Of the prepared foods the number is now so great that it is impossible to attempt an exhaustive list, and only a few of the more popular ones will be named. Among those of the second class, Ridge's Food for Infants, Neave's Food for Infants, and Lemann's Biscuit Powder are eligible preparations. In the third class may be mentioned Mellin's Food for Infants and Invalids, Bengel's Food, and Allen and Hanbury's Malted Farinaceous Food.

In beginning to add some farinaceous food to the diet of a child of three months, it is usually best to commence with one of the foods of the second class ; and if the supply of the mother's milk is fair in quantity, to make the food at first only with water, gradually adding a little cow's milk as the baby grows older, and manifests its power to digest the food satisfactorily, until it reaches the age of six months, when the food may be made entirely with milk. Babies even at a very early age exhibit predilections in taste, and it may sometimes be necessary to try two or three different foods before one is found which the baby likes and appreciates. It is generally necessary also to add a little sugar to their foods ; either sugar of milk or ordinary powdered white sugar may be made use of. The suitability of an individual food for an infant must be judged by the readiness with which it is taken, by the comfort which accompanies its digestion, and by the healthy motions of the baby when fed on it for a few days. Even when a food seems to agree perfectly with a baby so far as regards comfort in digestion, it may have to be changed on account of its constipating or relaxing effects on the bowels. Of the foods mentioned

above it may be remarked that Ridge's Food generally agrees best with babies having a tendency to relaxed bowels, while Neave's suits better when there is a tendency to constipation.

The predigested foods should only be had recourse to when it is obvious that the baby is not digesting well the foods mentioned in the second class, or when, on account of its weakness, or for other reasons, there is ground for thinking that its digestion requires artificial aid. These predigested foods have been subjected to a process which alters and makes soluble the starch in their composition, a process analogous to what goes on in the stomach and bowels during digestion; and in employing them the child is relieved of part of the work which is imposed on its digestive canal after the partaking of ordinary food. Most of the different malted foods have very much the same character. Benger's Food differs slightly from others in containing an active principle which assists in digesting the milk with which it is mixed, as well as the starch in the food itself. Being more easily digested than the foods of the second class, a small amount of milk may usually be employed in preparing them from the commencement of their administration, and the quantity of milk should be gradually increased until at six months of age the baby takes the food mixed with milk altogether undiluted. These foods should all be administered to the infant at a temperature of 90° to 98° F., and should be made thin enough to be drawn without difficulty through the nipple of a bottle.

The Bringing-up of an Infant "by hand."—Speaking generally, it is only during the first six months of an infant's life that much difficulty presents itself in the selection and management of food, and having brought the baby, entirely or partially nursed by its mother, to this point, a convenient opportunity presents itself of reverting to the commencement of life, and considering the diet appropriate to infants who, for various reasons, are unable to enjoy the comfort and advantage of maternal nutrition.

When it has been decided that a baby is to be brought up on artificial food, or "by hand," as it is sometimes technically called, it is usual to commence with the administration of diluted cow's milk, which may be either fresh or condensed. Whichever of the two is selected—and the selection must be made on grounds already laid down at p. 125—should be diluted with boiled water or with barley water, in the proportion already described as suitable for new-born infants as an addition to the mother's milk, and, slightly sweetened with sugar of milk, should be administered through a bottle about every two hours, in quantities suited to the capacity of the stomach. Immediately after birth from one to

two fluid ounces—a fluid ounce containing about two tablespoonfuls—is a proper quantity; when the baby is a month old about three ounces may be given, and this may be increased to about four ounces when the age of two months has been attained. At three months of age about five ounces of food will usually be taken at a meal with comfort, and before the age of six months is reached a baby may not be satisfied with less than six to eight ounces at a time.

Usually a baby fed on cow's milk from the bottle will require food rather more frequently than one nursed by its mother, but it is always well to lengthen the intervals as much as the child will permit. The amount of dilution necessary to aid the digestion of the cow's milk diminishes the nutritive value in proportion to the quantity. A baby nursed ten times in the twenty-four hours, and obtaining an ounce and a half of milk from the breast at each period of nursing, would receive in the course of the day and night fifteen ounces of pure milk. On the other hand, a baby fed by hand, and receiving two ounces of a dilution of one-third of milk to two-thirds of water every two hours, would only obtain eight ounces of pure cow's milk in the twenty-four hours, the other sixteen ounces being water or barley water, of comparatively little nutritious value. It is true that undiluted cow's milk is somewhat richer than mother's milk, but not so much so as to make eight ounces of the one equivalent to fifteen ounces of the other. Babies, however, do progress quite satisfactorily upon an allowance of from eight to ten ounces of pure cow's milk daily, so that it is probable that the estimate of the mother's milk, as amounting to fifteen ounces daily immediately after confinement, may be somewhat overstated.

When the baby has reached the age of six weeks, the amount of dilution of the milk may be somewhat lessened; and at three months most infants will take easily cow's milk diluted with an equal quantity of water or barley water. At this age a healthy baby will allow of intervals of at least three hours between its meals, and calculating that it has seven meals in the twenty-four hours, and takes at each meal five ounces of diluted milk, it will receive not much less than a pint of pure milk during the day and night. The remarks about dilution apply equally to fresh milk and condensed milk, it being remembered always that the condensed milk requires an initial dilution to restore it to the condition of fresh milk.

At the age of three months it is usually desirable to begin the use of some farinaceous food, which may be given at first once or twice in the twenty-four hours, and after some weeks more fre-

quently. One of the second class of foods should be selected, such as Ridge's or Neave's Food, and should be made from the first with milk of the same dilution as the infant is taking at the time. It should be given through the bottle, and should be made thin enough to pass without difficulty through the nipple; and the whole amount given at a time should equal in bulk the quantity of diluted milk serving for one meal.

After the age of three months the capacity of the stomach increases more slowly, so that the quantity of food given at a meal can be augmented only very gradually; but the digestive power usually increases rapidly, and it is possible to diminish the dilution of the milk so rapidly that at the age of five or six months, pure cow's milk may be given without any dilution. The farinaceous food may now also be prepared with undiluted milk; and the child of six months, taking four meals daily of about six ounces of undiluted milk, and two of farinaceous food, will absorb in the twenty-four hours from a pint to a pint and a half of milk, and from half an ounce to an ounce by weight of starchy food. This is a full diet for a healthy child of six months.

Occasional Inability of Infant to digest diluted Cow's Milk.—

Not unfrequently it happens that the new-born infant is unable to digest cow's milk, however much it may be diluted with water or barley water. What course is to be then adopted? Two alternatives present themselves in this emergency. The first is to adopt some method of preparing the cow's milk so as to make it more easily digested than when simply diluted with water or barley water. The other is to resort to the use of some other kind of milk, either that of the ass, or of the goat, or of a wet nurse.

The first alternative will in general be preferred as the more convenient, and three different methods of preparing milk for infants' digestion are employed, which will be described in the order in which perhaps they are most frequently used. All, however, in varying circumstances are equally eligible, and individual preferences will not unfrequently decide the selection. If one method is unsatisfactory in regard to the comfort and welfare of the child, another must be resorted to.

The milk prepared by the three methods respectively is known as **humanized milk**, **sterilized milk**, or **peptonized milk**.

Humanized milk is simply cow's milk diluted with a certain amount of whey, and with some superadded cream. It is prepared in the following way. A certain quantity of cow's milk, say, a pint, is set aside in a cool place until the cream rises to the surface. This is skimmed off and kept, and to the milk remaining is added enough essence of rennet to curdle it thoroughly. The whey

is strained off from the curd, added with the cream previously separated to a pint of fresh cow's milk, and the mixture is known as humanized milk. It is distinctly more digestible than ordinary diluted milk, and often agrees well with young infants, being given without any further dilution in the quantities suitable to the age of the infant. It may be employed exclusively during the first three months of a baby's life, and may after that age be used with the addition of some farinaceous food. In cases where difficulty of digestion has necessitated the humanizing of the milk, some food of the third class is usually preferred; Benger's Food is often very valuable when the progress of the child is not satisfactory, in spite of its apparently digesting the humanized milk with comfort.

Sterilized milk is milk in which all germs tending to decomposition have been destroyed by exposure to a boiling heat for a short period of time. Fresh cow's milk always contains some impurities received from the atmosphere or from the vessels in which it is contained, however much care may have been taken to maintain absolute cleanliness. To an infant with good digestion these impurities do no harm, the digestive powers being sufficient to overcome their influence; but when the digestion is feeble, unhealthy fermentation is frequently caused by them in the child's stomach, which becomes irritated and inflamed, and its powers further enfeebled, while at the same time the milk in the stomach is rendered by the fermentation still more indigestible. The result to the child is sickness, with vomiting of acrid and sour-smelling curdled milk, followed frequently by diarrhoea of an offensive character, with rapid wasting of body and loss of strength. Chemical and microscopical analysis has demonstrated that this unhealthy fermentation is due to the presence of small germs introduced with the impurities, and it has been discovered that those germs can be destroyed by exposing the milk for thirty to forty minutes to a temperature equal to the boiling-point of water, and that when the germs are so destroyed the milk does not ferment or decompose. The process of destroying the germs is known as the sterilizing of the milk, and is carried out in the following way. An apparatus for the purpose is necessary, which consists essentially of one dozen to twenty feeding-bottles, each capable of containing from four to five fluid ounces of milk, india-rubber and glass stoppers for these bottles, a tin saucepan with lid to be used for boiling, and a frame for holding the bottles when placed in the water in the saucepan. Some india-rubber nipples to be fitted on to the bottles for the convenience of the baby accompany the apparatus, and various little arrangements to assist in cleanliness. It is manu-

factured in Munich by Metzeler & Co., whose London agent is Julius Pearl, 4 Bury Court, St Mary Axe, London, E.C., and costs from 13s. to 20s. according to the number of the bottles and other conveniences. The apparatus does not seem to be patented, and will probably be manufactured in this country when the merits of sterilized milk are more fully appreciated.

The bottles are filled up to the neck with fresh cow's milk diluted with water or with barley water to the extent desired, partially stoppered with india-rubber stoppers perforated through the centre, and placed, arranged in the frame, in the saucepan, which is filled with cold water until the bottles are almost entirely covered. The saucepan is covered and placed on the fire, and the water is raised to the boiling-point, and kept boiling for about five minutes. The lid of the saucepan is then taken off, and the perforated openings in the centre of the india-rubber stoppers closed by the insertion of the glass stoppers, which should be dipped in the boiling water before being pushed into the india-rubber stoppers. The lid of the saucepan is then replaced, and the boiling continued for thirty-five or forty minutes. The milk is by this subjection to boiling heat thoroughly sterilized, and the bottles are removed from the saucepan, and put aside until required for the use of the infant. They should be kept in a moderately cool place. If this is done, it is said that the milk will keep perfectly fresh for three or four weeks. It is undesirable under ordinary circumstances to make any experiment in this direction, and it will generally be found satisfactory to sterilize only enough at a time to serve for twenty-four hours. To feed the infant, one of the bottles is taken and placed for a few minutes in water as hot as the hand will bear comfortably, until the milk in it is properly warmed; the india-rubber and glass stoppers are then removed, and an india-rubber nipple attached to the neck of the bottle, from which the baby draws directly the sterilized milk. A fresh bottle must always be opened for each meal; if anything is left in it after the baby has finished, it should be thrown out.

Within recent years many other arrangements of varied designs have been introduced for the purpose of effectively sterilizing milk, some of them much more simple than that described above, which was first introduced by Professor Soxhlet, and is known by his name. Those known as Aymard's and Cathcart's respectively may be mentioned as efficient and economical. Whatever apparatus is used, strict attention to cleanliness is essential.

Peptonized milk, the third substitute for ordinary diluted milk when difficulties of digestion present themselves in young infants, is as simple of preparation as sterilized milk, and has the advantage

another will sacrifice her own inclinations, and consent to what she be assured is for the benefit of her child.

Additions to Milk Diet.—When babies fed by any of the Liquefied means just described have attained *the age of three & more*, it will probably be desirable to add some farinaceous food chemists' diet; and one of the predigested foods will be most suitably made with the particular preparation of milk upon extent as infant has been so far reared. When peptonized milk only, even for during the first three months of life, it is desirable an equal quantity somewhat the amount of peptonization. The when a baby is intended to assist, not to supplant, the digestive milk with one of infant; and when it is three months old, and in good to peptonize at once to require so much assistance as when an emergency enough can be had. The diminution of the peptonization is

Fairchild's Peptonizing the peptonizing agent to act for a shorter tonizing Pellets are put up arrested by boiling the milk for a few pint of milk, so that if on minutes after the powder has been added, a quarter of a powder need for fifteen or twenty minutes. When F. and diluted to the extent give the peptonized milk immediately and the powder mixed with it any means having been used to water as hot as can be borne by it, the reduction is best made by twenty minutes, when the peptonizing agent employed.

has been used, it may be given to the age of six months, it will preparation. If a jug or other receptacle without any peptonization, milk for one meal is poured into a bottle prepared with ordinary fresh immediately; what remains must be put

for four or five minutes to arrest the *next months* it is usually found peptonization. It may then be left undisturbed to babies, even when their twenty-four hours if necessary, and since so far without any assistance. in warm water before being administered may be used for this

The degree of peptonization, and the milk. It is always best, when to the digestive power of the infant digested foods; and generally at time the milk is subjected to the arrowroot, corn-flour, hominy, or peptonizing process continuing unchanged, and without any subsequent ally it will be found that peptonization. Food at this age should not of an hour gives sufficient aid to baby should be taught to feed from child. If the process is allowed to go on independently of the mother's minutes, or if too much of the powder is put from a cup. There are two becomes bitter in taste, and so being fed with a spoon in place of may dislike and refuse to take it. In the first place, the baby takes to be kept, the boiling to arrest it is thus better mixed with the saliva for about five minutes; it is not its digestion; and in the second place, to the boiling-point.

and more nutritious. The artificial Sterilized milk in air-tight bottles twice daily, at an hour most convenient

ent to relieve the mother from her duty of suckling the infant. In children who have been brought up artificially, some farinaceous food may be given with almost every meal, whether ordinary milk or prepared milk has been previously employed. If some malted food of the third kind has been used hitherto, this should be varied once or twice a day by a food of the second class, and gradually the malted food should be given up, and replaced by food of either of the two other classes. It is sometimes convenient and admissible, up to the age of one year or a little beyond, to give milk from a bottle, and predigested food may also be given in the same way ; but for other foods it is always best to adopt a spoon as early as possible.

At the age of nine or ten months a little animal food may be commenced, in the form first of a lightly boiled egg every second day, given along with a little thin bread and butter ; and if this agrees it may be alternated with some animal soup, chicken and veal broth being somewhat preferable to mutton or beef tea. These soups may be thickened with a little arrowroot or corn-flour, or some other farinaceous food, or they may be given without any addition, accompanied with a little bread. When eggs are found to agree well, they may be cooked in puddings with rice, tapioca, or any other of the various forms of starchy food.

Solid Animal Food.—*When one year old* a baby, if it has cut its front teeth and first molars, may take and will enjoy a little minced white fish or fowl, which may be given on alternate days with one of the animal broths. At this age many children will be quite satisfied, and will maintain their health best, with not more than four meals daily, composed somewhat as follows :—Breakfast, Ridge's or Neave's Food, or hominy made with milk ; dinner, one day a little soup and milk pudding, another day an egg and a little arrowroot or cornflour ; a third day some minced fish or chicken, and a little custard ; in the afternoon again Ridge's or other food, or some milk with bread and butter ; and before going to bed some milk and a rusk or small biscuit. In many cases where a child eats with appetite, the fourth meal may be omitted with advantage ; in others, where the appetite is poor and the child not strong, a small meal of milk and a rusk will be advisable between breakfast and dinner ; but anything beyond that amount is usually undesirable. No greater mistake can be made in bringing up a young child than in giving it too frequent meals ; and every food given is to be regarded as a meal, in so far that it calls upon the digestive powers of the child for its assimilation.

At the age of eighteen months a child is able to masticate tender

fish, fowl, or even beef or mutton without its being previously minced; and a little vegetable, in the form of mashed potato, cauliflower, spinach, or cabbage may be carefully added to the diet. When two years of life are completed, the teeth are fully developed, and the range of diet may be still further widened.

Nerve Stimulants such as tea, coffee, and alcoholic fluids, should have no place in the diet of young children. They exercise a distinctly injurious immediate effect upon the digestion, and upon the exceedingly sensitive nervous system; and their habitual use lays the foundation of many nervous disorders in future life. The administration of such stimulants is followed by excitement, irritability, and restlessness at night, and distaste for more nourishing but less stimulating foods not unfrequently results. Until the age of four or five is attained, children should not be permitted the habitual use of tea or coffee, and no alcoholic preparations of any kind should be ever given to children except under medical advice.

Common Errors in Diet of Infants.—There are three different directions in which the diet of children is apt to be found to err:—

(1) In the first place, many children suffer from a **want of sufficient fatty food** in their diet. The constitutional wants of children demand a considerable amount of fat in the food, and this is supplied in early life by the cream contained in the milk. If diluted cow's milk is employed as a substitute for mother's milk, the proportion of cream in it is considerably less, and unless the deficit is made up in some way, the child is apt to suffer in health. While taking apparently a sufficient quantity of food, it will appear thin, and the limbs, instead of being rounded and chubby, will be flaccid and soft. When this is observed in a child otherwise apparently healthy, the question should always present itself as to whether anything is wanting in the diet. If the want is not supplied, the child will continue in depressed health, be very easily affected by cold, take bronchitis on slight exposure, and perhaps when a year or two old develop rickets. There is not much difficulty, as a rule, in adequately supplying the deficit. In very young life cream may be added to the milk, or a very little cod-liver oil may be given once or twice daily. When the child has passed the age of six months, a fair quantity of butter may be given with bread, and when a year old it will take readily a little fried fat of bacon, or some bread soaked in fat gravy of beef.

(2) The second error in the diet of children, and perhaps the most frequent of the three, is the administration of **farinaceous food in excess**. Under no circumstances can farinaceous food

take the place of milk, although it is valuable as an addition to it. The milk contains certain chemical constituents called azotes, which are absolutely necessary for the proper nourishment of the body, and which are found only in very minute quantities in farinaceous food. They exist to a much greater extent in animal soups, and these can occasionally be made to supply for a little time, in conjunction with farinaceous foods, the place of milk ; but even in these soups the quantity of azotes is much below the requirements of an infant's frame. When farinaceous food is given in excess, the digestion of the child becomes irritable, the bowels tend to be lax, and the motions smell unpleasantly ; sickness is apt to occur, the night's rest is disturbed, and there is a tendency to eczematous affections of the skin. When the excess of farinaceous food is accompanied by a deficit of the nitrogenous food in the form of milk, the infant becomes thin, and the face looks pinched and weary. The remedy is simple, consisting in reducing the quantity of farinaceous food, assisting in its digestion when necessary by giving it in a predigested form such as Mellin's or Allen & Hanbury's Malted Food, increasing the amount of milk so far as the digestive powers of the child will permit, and adding other nitrogenous food, such as soups or juice of raw meat, when the baby has attained an age at which these can be given with advantage.

(3) The third error is one not met with usually until after the first year of life, and consists of giving the child **a diet too highly nitrogenous**. This error is very improbable so long as the only nitrogenous food given to the baby is milk ; but when eggs, soups, and minced fish and fowl are added to the diet, it is not unfrequent to find the child suffering from an excess of azotes. Such children usually tend to stoutness, and are apt to become somewhat yellow and slightly jaundiced occasionally ; the whites of the eyes lose their clearness, the bowels tend to be confined, and the urine to be high-coloured and disagreeable in smell, with an occasional sediment in it. Disturbed sleep is common, and grinding of the teeth at night ; and an eczematous eruption may occur, situated most frequently in the folds of the elbows and knees. The remedy is obvious ; and it need only be remarked that no healthy child under the age of five years will ever suffer from a restriction of animal food so long as it obtains a full quantity of milk and cream, and a fair allowance of digestible farinaceous food.

The striking peculiarity of the digestive organs of children as compared with those of adults is the facility with which they become irritated and inflamed. The ingestion of one meal of an improper character is quite sufficient to set up inflammation of the lining membrane of the stomach and bowels which will continue

for days, and may enfeeble the digestion for weeks. Fortunately, a safeguard is provided in the facility with which vomiting is provoked in children, an indigestible article of food being frequently vomited before it has had time to create much disturbance. But this will not always occur; and such small alterations as the very slightest sourness of milk, such as might result from leaving it for a little in a dirty bottle, slight rancidity of butter, or some want of freshness in fish, too minute to be detected by the senses of the parent, may be sufficient to set up acute irritation of the stomach and bowels of the child. No time is better spent by a mother than that which is devoted to seeing that the meals of the child are properly prepared and carefully administered.

CHAPTER XIV.

PHYSICAL AND MENTAL TRAINING OF THE CHILD.

OBJECT AIMED AT—NECESSITY OF TRAINING FACULTIES—RESULTS OF DISUSE—RELATION BETWEEN BODY AND MIND—IMPORTANCE OF MAINTENANCE OF HEALTH, AND DEVELOPMENT OF FUNCTION—VARIATIONS IN DIFFERENT CHILDREN DUE TO WANT OF TRAINING—DREAD OF UNDUE STRAIN—VALUE OF EFFORT ALTERNATING WITH REST—NECESSITY OF CARE AGAINST UNDULY SEVERE OR PROLONGED STRAIN—SPONTANEOUS TENDENCY TO MOVEMENT—ARTIFICIAL MEANS OF EXERCISE—SWINGING—MILITARY DRILL—MUSICAL CALISTHENICS—DANCING—IMPORTANCE OF REGULARITY IN EXERCISE—NECESSITY OF DUE REST—TRAINING OF SPECIAL SENSES—MENTAL TRAINING—RISK OF OVERWORK—RELATION BETWEEN FATIGUE AND WANT OF INTEREST—MORAL TRAINING.

In the cultivation of the physical and mental powers of a child, it is necessary to keep in view the object aimed at, as a guide to the means to be adopted. That object ought to be the **development to the highest possible extent** of the various faculties with which the child is endowed at birth, and the discovery and cultivation of any specially valuable tendency which it may have inherited from past generations. Both mental and physical powers require to be exercised and trained before they can be utilized in the work of life, and **disuse** of any mental faculty is followed by feebleness and atrophy of the particular part of the mind involved, quite as inevitably as want of exercise of any particular muscle results in its wasting and loss of power. The physical and mental

powers also are correlated in such a way that it is very seldom that good mental work can be done in the absence of a fair degree of physical health ; the converse, that mental development is essential for the due performance of physical functions is, perhaps, not so universally apparent, although in some sense it is also true.

It follows naturally from this that from early life attention should be directed specially to the *maintenance of the various organs of the body in perfect health, and to their due functional development.* The muscular system has to be exercised, so that the muscles may perform their work well and quickly, and with proper balance and accuracy ; and the control of the muscles by the nervous system should be cultivated by exercises involving due rhythm and harmony between different parts of the body. The organs of special sense, more especially those of sight and hearing, are capable of great development, and call for especial attention. Nothing is more striking than the variations in the faculty of observation noticeable among children. In looking at a flower, for instance, one child will see nothing but a mass of colour, while another of similar age will note different shades of colour, different shapes of leaves, and minute peculiarities of structure. Natural ability, or perhaps more properly inherited qualities, may account for a part of this difference, but it may generally be assumed that in some way or another the power of observation has been more highly educated in the one child than in the other.

Effort and Rest.—There not unfrequently exists a rather exaggerated dread of putting too much strain upon the faculties of children. But all experience points to the fact that education and development both of bodily and mental functions are best promoted by series of efforts alternating with periods of rest. It is not by steady and continuous hard work that the muscles of the athlete are trained to their extreme power ; it is by occasional severe exercise followed by relaxation, by the excitement of contest, alternating with the repose of achievement. Nor are the highest mental attainments usually associated with continuous plodding work ; the triumphs of oratory of the statesman and barrister are followed by periods of recreation and mental relaxation ; the strain upon the mind of the successful mathematician or philosopher must be limited in duration, and replaced by some totally different variety of occupation. There is no doubt at the base of this feeling a grain of truth in the fact that the strain may be too severe, or may be unduly prolonged. It is in this matter that the propriety of due regulation and progressive advancement of different exercises for the body and mind falls to be indicated and insisted upon. But the possibility of overdoing anything is


no reason for its not being done at all. The result would scarcely be satisfactory if every child were starved on account of a dread of the results following from over-indulgence in food.

During the first few years of life the **spontaneous tendency to movement** of every healthy child is sufficient training for the muscular system. Every child in normal health is ambitious of walking and running, and its efforts in acquiring these powers exercise fully not only the muscles of the legs but also those of the arms and back; and in the breathlessness produced by exertion the lungs and the heart also receive tone and are strengthened. When a child is able to walk well, it usually commences to climb on chairs and beds, and in this way develops specially the muscles of its arms. At this stage of activity, when all experience is new, all the special senses are called into requisition, the eyes and ears being always on the alert when the child is awake, and the senses of smell, touch, and especially taste, being almost continuously exercised.

Artificial Means of Exercise.—As the child becomes somewhat older, reaching the age of four or five years, artificial means of exercise should be used to further develop the muscles and strengthen the frame. Where available, **swinging** on a low swing is a very useful exercise, strengthening the arms and developing the chest at the same time that training is given to the muscles of the body in maintaining the balance. Hanging on a trapeze with the hands for a short time morning and evening is very valuable in developing the muscles of the chest and back as well as of the arms, and has the advantage over swinging of being quite free from risk of accident. **Military drill** is now introduced into most children's schools, with marked beneficial effects on the development of their chests, giving them by this enlargement increased breathing power, and consequent general invigoration of health. Somewhat similar to this, but even more beneficial, are the calisthenics to the accompaniment of **music** which have lately become popular. Hands and feet, arms and legs and bodies are taught to act in harmony, while at the same time the eye and the ear are trained to accuracy of sight and sound. When the music is produced by the vocal efforts of the children singing rhymed words to simple tunes, no better physical training can be imagined, and very few indeed can be productive of more pleasure to the children. In the same category of exercises, although not of quite so much value, may be placed **dancing**. It is quite a mistake for parents to consider those exercises as *only* amusements. Amusements, fortunately, they are to the children, but they are of inestimable value in maintaining the health of the body, and have

a distinctly beneficial effect on the mental condition, even apart from and beyond what is due to the satisfactory physical well-being. More especially to girls from the age of five to fifteen, who are often deprived by custom of many of the physical recreations enjoyed by boys, those various muscular exercises are of prime importance.

Developing as they all do the breathing-powers, and necessitating deep respiration, it is scarcely necessary to point out the propriety of their being carried out in a **pure atmosphere**, in order that the greatest amount of benefit may be derived from them. Where possible, it is best that they should be conducted in the open air. Exercises of this kind, to be thoroughly useful, should always be practised **regularly** and **at frequent intervals**. The devotion of half an hour or an hour once or twice weekly to drill or calisthenics is of incomparably less value than their practice for a quarter of an hour daily. The rule which exists now in most boys' public schools, of insisting on every boy taking part daily in the recreations and games of the school, unless specially exempted by medical order, is a sound one from a physiological point of view.

Other exercises of much value in  development of the muscular system are riding and swimming, while, for the utilization of the lungs to their full extent, nothing is better than **singing**, especially in part-songs.

Importance of Rest.—While the muscular system is thus exercised, care must be taken to insure due rest at intervals. Much harm is sometimes done by forgetting the fact that sitting upright without any support to the back gives no rest whatever to the muscles which support the body, and in fact puts additional strain upon them.

In the case of girls especially, whose frames are not so strong as those of boys, **curvature of the spine**, with projection of shoulder blades and inequality in the height of the shoulders, is frequently the result of sitting without support for the back during the hours of school. The strain upon the muscles of the back in such cases produces discomfort, which the girl attempts to relieve by sitting in a posture which throws the weight more upon the bones and ligaments than upon the muscles; the spine, losing the proper support of the muscles, becomes curved to one side or the other, usually assuming more or less the form of the letter S, and in time the small bones forming the spine alter in shape, and permanent deformity results. Girls whose muscles are becoming thus weakened and unable to support the body properly, can generally be recognised when standing by their resting the weight of the body

more on one leg than on the other, and leaning slightly over towards the supported side. A habitual attitude of that kind when standing should always excite suspicion of commencing muscular weakness, and indicate the propriety of regulated exercise to strengthen, and regulated rest to restore, the fatigued muscles. At the period of life in girls from twelve to fifteen, when an additional tax is put upon their strength by alterations already described in Chapter XI., it is absolute cruelty to expect them to sit at lessons for two or three hours daily, without proper support for their backs. And this is not afforded even by chairs with backs, unless the backs slope outwards at a moderate angle from the chair. An absolutely upright back is almost valueless; the back of the chair should slope at such an angle as to afford some support for the spine along its whole length.

Curvature of the spine is not the only penalty which neglect of these considerations exacts. The initial curvature of the spine is frequently followed by contraction of the chest and diminution of the breathing space, and in the end permanent deterioration of health may ensue. Localised muscular fatigue is also not unfrequently the cause of emotional outbursts, and many of the so-called hysterical attacks in girls may be traced to some unfair tax which has been imposed on the muscular system.

The Training of the Special Senses.—With regard to this, it is impossible here to do more than indicate some useful methods. The practice of games in which rapid recognition of colours and pictures is required, or where rapid enumeration of marks is called for, is valuable in training the eye to quickness and accuracy. The interest of children is easily excited in the recognition of common plants, in the shapes and colours of their leaves and flowers; a taste for natural science may thus be aroused, while at the same time the sense of sight is cultivated.

The sense of hearing can be educated by games in which rapid association of sound with action is called for. Children living in the country should be induced to differentiate the voices of the singing birds, and to distinguish other sounds of rural life. When any musical appreciation exists, singing should be taught, and opportunities for hearing music afforded.

The sense of touch and what is known as the muscular sense are developed best by training in manual employments, such as carpenter work and turning for boys, and sewing, knitting, and fancy work for girls.

Mental Training of Children.—There is no risk in the present day of this being neglected. The tendency is distinctly towards over-pressure, and what is called for is more warning of the evil

effects of over-taxing the brain than admonitions with regard to its due culture. Although the results of over-fatigue of the brain are not so immediately obvious as those of over-strain of the muscular system, they are probably equally injurious, and of quite as permanent a character. The practice which exists in many schools of giving out home lessons to be finished when the school hours are over, is responsible for much injury to the health both of boys and girls. The brain, like the rest of the body, becomes somewhat fatigued towards night, and resents being called upon to make exertion at a time when it should be preparing for rest. The result is often restless sleep followed by fatigue and irritability on waking; and the natural sequence, impairment of digestion, and general deterioration of health. In brain work, more conspicuously even than in muscular work, the principle laid down early in this chapter, of effort succeeded by rest, calls for full recognition. Close attention and real work are possible for two or three hours daily if this period is succeeded by mental rest and recreation; but if the time which should be given to those is occupied by home lessons, the inevitable result is carelessness and want of attention during school hours, and mental progress, so far from being expedited, is retarded.

A Rule of Universal Application is that fatigue is not nearly so easily induced when the exercise, be it physical or mental, is pleasurable and suited to the taste, as when it is disagreeable and distasteful. An illustration on the physical side is afforded by the distance which can be covered without fatigue in walking with a pleasant companion, or through a picturesque country, as compared with that by which fatigue is induced if one is solitary, or if the walk be uninteresting. It should therefore, as education progresses, be made an object to discover the particular tastes and tendencies of boys and girls, and to cultivate those, in preference to following studies which are disliked; as in this way the greater strain can be put on the mental faculties without fatigue, and the better results accordingly secured. Most boys and girls have some favourite study. When this is discovered, opportunity for following it should always if possible be afforded, even although the study may not commend itself to the parent or guardian as the most useful, or the one most calculated to ensure success in after life. Any study which is followed out with thoroughness and enthusiasm is of immense value in training the mind, even when it cannot always be considered as advantageous from a "paying" point of view.

Formation of Moral Character.—It would be out of place to say much here about the moral training of children. This must depend upon their parents, their teachers, their companions, and,

to some extent, their books. Judicious parents will always exercise due supervision over the companions with whom their children associate, and the books which occupy part of their leisure hours. It is in early life that the foundation of future character is laid ; and it should always be borne in mind that the force of example is infinitely stronger than the influence of precept or doctrine. Parents and teachers can scarcely expect to find in their children and pupils virtues of the possession of which they themselves afford no evidence.

CHAPTER XV.

SOME CONGENITAL DEFECTS IN CHILDREN.

“MOTHERS’ MARKS”—CAUSE—TREATMENT—CLUB-FOOT—HARE-LIP—
 SUPERNUMERARY FINGERS AND TOES—HERNIA—UMBILICAL—
 INGUINAL—HERNIA IN MIDDLE LINE OF ABDOMEN—IMPERFORATE
 LACHRYMAL DUCTS—LIABILITY TO BE MISTAKEN FOR INFLAMMATION
 —IMPERFECTIONS OF SIGHT—SHORT-SIGHT—LONG-SIGHT—ASTIGMA-
 TISM—SQUINTING—CURABILITY—DETECTION OF SHORT-SIGHT—OF
 ASTIGMATISM.

While the vast majority of children are born with bodies practically perfect in structure, a small proportion are found to exhibit imperfections of different kinds, some of which are remediable by surgical or other means. Attention will be called in this chapter to some of those defects capable of remedy, their appearance will be described, and the propriety of steps being adopted for their relief will be indicated.

Nævi.—Among the most common imperfections of young infants is the presence on the skin of what are known popularly as *mothers’ marks*, and scientifically as *nævi*. A mother’s mark or *nævus* appears as a red or purplish patch upon the skin, sometimes elevated, sometimes on the same level as the healthy skin around. *Nævi* vary very much in size, being seen as small as a split pea, while they occasionally extend over a considerable part of the body. Most commonly they are about the size of a sixpenny-bit or a shilling. Sometimes their edge is sharply defined ; at other times the edges are indented, and little processes are thrown out like the straggling legs of a spider. They result from an abnormal enlargement of the superficial blood-vessels, and can often

be made partially to disappear by pressure being applied to them, returning when the pressure is removed. There is a popular belief that they are frequently caused by some vivid impression which has been made on the mother before the birth of the child ; and they are sometimes supposed to represent the outline of some animal or other object which may have caused alarm to the mother. It is this supposition which has gained for them the name of mothers' marks, but it is exceedingly doubtful if there is any real foundation for this hypothesis. The smaller *nævi* are usually cured without much difficulty, and it is desirable that they should be dealt with in the first few months of life, especially if they are seen to be increasing in size, as they are somewhat prone to do. Frequently they are destroyed satisfactorily by performing vaccination upon them ; if this is not convenient, they can be removed by burning with strong nitric acid, the pain of the application of which only lasts for one or two minutes. The larger ones require rather more elaborate surgical treatment, but can generally be removed without any very unsightly cicatrix being left behind. It is always well to have them removed when possible, as in the first place they generally tend to grow, and may become dangerously large, and in the second place, when on any part of the body exposed to view they are very unsightly. It is only the very small ones which ever disappear spontaneously, and even with these disappearance without treatment is rare.

Club-foot.—A deformity which is not very rare, and which is usually very amenable to early treatment, is "club-foot." This consists of a malformation, in which the foot is twisted in some peculiar direction, so that the sole cannot be placed properly on the ground when the child is held erect. The foot may be twisted upwards or downwards, inwards or outwards, and there may be combination of these directions ; the more common instances of club-foot being those in which the foot is twisted downwards and inwards, and in which it is displaced upwards and outwards. Club-foot may affect only one foot, or it may occur in both feet. It is caused by some want of balance between the muscles acting on the different parts of the foot ; and it is usually rectified by restoring the balance by means of small operations intended to lengthen the tendons of particular muscles, and by altering the position of the feet with the aid of splints or bandages of plaster of Paris. It is of much importance that the cure should be carried out early in life, as, if operation is postponed too long, the bones of the foot become altered in shape by the pressure resulting from the misplacement, and the result of operation is not so completely satisfactory.

Hare-lip.—The presence of hare-lip in babies calls also for very early operation, if the result is to be thoroughly satisfactory. Hare-lip is the name given to a form of imperfect development affecting the upper lip, which is completely divided near the centre by a deep furrow, reaching from the pillar of the nose to the mouth. Sometimes the division affects also the upper gum and the roof of the mouth, extending back to the uvula; occasionally there is a double division of the lip, with a projection of skin between them, attached at its base to the nose. Unpromising as such cases may at first sight appear, they are perfectly amenable to treatment by surgical operation; and a successful operation in early life usually results in the restoration of the proper outline of the lip, leaving behind, as the only trace of the deformity, a comparatively inconspicuous cicatrix, with perhaps a very slight groove in the edge of the lip where the fissure originally commenced. Where the hare-lip has been double there may remain two parallel cicatrices in place of one, but this does not add to the conspicuousness of the scar, and even sometimes diminishes it.

Supernumerary Fingers and Toes.—Babies are occasionally born with supernumerary fingers and toes; and when these are in such a position as to be inconvenient when the child grows older, or to look unsightly, they ought to be removed as soon after birth as possible. Very young babies bear exceedingly well small operations in which no loss of blood is involved, and although they experience pain at the time of the operation, certainly are not so sensible of any subsequent discomfort as children of an older growth.

Hernia, or rupture of a part of the bowel through some weak point in the abdominal walls, is a common defect in young infants. There are three specially weak points in the walls of the abdomen where ruptures are prone to occur.

1. The situation at which ruptures most frequently are observed in infants is at the navel, where at birth the umbilical cord is attached. The wall of the abdomen at this point is naturally somewhat weak in infants, and any exceptional strain upon it, such as may result from its being dragged upon by the cord at birth, or being pressed outwards by frequent and violent crying, is apt to cause a small piece of bowel to project in such a way as to form a small tumour under the skin. That such a tumour is a rupture or hernia can usually be demonstrated by the possibility of gently pressing it backwards into the abdomen so as to make it disappear, and by its return when the pressure is removed, and the infant begins to cry.

Such **umbilical herniæ**, as they are called, are generally of

small size, rarely exceeding the dimensions of a plum, and usually only attaining the size of a large thimble. With reasonable care and treatment, they are invariably cured. All that is required for the cure is that an elastic belt with a small flat pad over the navel should be adjusted to the infant, and maintained in its position for six months or a year, only being removed for the purpose of washing. The belt should be three to four inches in breadth, and is best made with silk elastic attached to linen, so as to allow of adjusting the pressure by lacing at the back; but if care is taken to prevent any irritation of the skin, a plain india-rubber band may be used. The pressure of the belt should be just sufficient to keep the hernia from projecting outwards.

2. The second site at which herniæ are commonly seen is just above the groin on either side of the body. Herniæ occurring at this situation are called **inguinal herniæ**, and are met with almost exclusively in male infants only. They vary in size more than umbilical herniæ, but do not project so much even when large, taking a course downwards under the skin into the scrotum, instead of pushing their way straight outwards. They are recognised by the same characters as the umbilical herniæ, being returnable into the abdomen by gentle pressure, and being forced out again by crying or other exertion on the part of the infant.

Considerable care and attention must be directed to their cure. It is necessary to have a proper truss adjusted, and to have it altered from time to time to keep pace with the growth of the child. In the first six months of the infant's life much difficulty is usually experienced in preventing the truss from irritating the skin upon which it presses. Trusses covered entirely with india-rubber are usually employed, as they do not suffer injury from being wetted with urine. The truss must always be kept as clean and as dry as possible, and the skin underneath where the truss presses must be washed, dried carefully, and powdered each time that the diapers are changed. It is very seldom that an inguinal hernia is cured in less than a year, and not unfrequently two or three years must be allowed to elapse before the truss can be safely dispensed with.

3. The third situation where herniæ are occasionally met with in infants is **in the middle line of the abdomen**, at any point between the end of the breastbone and the navel. Herniæ occurring here are almost invariably very small, often not exceeding the size of a pea. They are, however, not unfrequently the source of pain, and their diminutive size occasionally leads to their being overlooked, more especially as in well-nourished children they can sometimes only be felt and not seen. Their character is

demonstrated by their disappearance under pressure, and their reappearance afterwards. For their cure a belt similar to that recommended for umbilical hernia must be employed, the pad being placed so as to press upon the site of the rupture.

Defects of the Eye.—Children are occasionally born with an **imperforate condition** of the small canals which carry off the secretion of the eyes to the interior of the nose. Normally, from the inner corners of the lower and upper eyelids two small tubes arise, and run inwards to a small bag which lies between the inner corner of the eye and the nose, from which a somewhat larger tube or canal leads into the back of the nose. The commencement of the small tubes can be seen distinctly if the eyelids are slightly everted. The secretion from the eye, including the tears, after passing over the eye, flows down these small tubes, and is carried through the bag or sac, as it is termed, into the nose. If these tubes are imperforate, the secretion escapes at the inner corner of the eye, and flows down the cheek, producing in time considerable irritation. When this first occurs, it is apt to be mistaken for slight inflammation of the eye, and the mistake is a natural one, as the secretion, if it does not find its proper exit through the tubes, is apt to set up a little inflammation. When, however, the condition recurs again and again, suspicion should always arise as to the possibility of want of patency of the tubes, and the attention of the medical attendant should be called to the matter. In most cases only a very slight operation is required to open up the tubes; but, as a rule, it will have to be done under an anæsthetic on account of the delicacy of manipulation required, and the risk of damage from sudden movement of the child.

The most frequent and the most important of all congenital defects are **imperfections of vision**. As an optical instrument, the eye is not always by any means all that one could desire, although its deficiencies do not usually become apparent until a few years have elapsed from birth. Most people are aware that, on looking through a telescope or field-glass, some adjustment has usually to be made to bring objects into focus before they can be seen clearly. Now the most frequent congenital defect in eyes is that they are not focussed properly for the external objects at which they are intended to gaze. A certain power of altering the focus is possessed by all eyes, but it is limited, while the divergences in structure much exceed the bounds of these limits. It results that some eyes can only see clearly objects very near to them, when they are called short-sighted, or myopic; or can only see distinctly objects at a distance, when they are named long-sighted or hypermetropic. Some eyes are so very inconveniently formed that they are long-

sighted for perpendicular objects, and short-sighted for horizontal objects, or the reverse, so that a person with such eyes might read distinctly a clock face at a distance when the hour was half-past twelve, but could not see the hands at all when they were placed at fifteen minutes to three. Such eyes are called *astigmatic*.

Of the three forms of abnormality of sight, the one usually discovered earliest is **long-sight** or **hypermetropia**, and for the reason that it very frequently gives rise to the unsightly affection known as "squint."

Squinting in children is almost invariably the result of some imperfection of sight, and in the great majority of cases the imperfection is hypermetropia. The reason of this cannot be fully explained here, but it may be said in general terms that it results from the effort made by a long-sighted child to get clear vision of objects in close proximity to him. The squint is thus most likely to occur at an age when the child begins to make use of playthings requiring accurate vision, such as puzzles, pictures, &c. When any abnormal position of one eye with relation to the other is noticed on a child concentrating its attention upon any object, it is time to take medical advice respecting the condition of the accommodation of the eyes. If neglected, the squint may in time become permanent, and not only is the result unsightly, but often the sight is still further impaired. At the same time, it is never too late to take advice regarding the visual powers; and squints of considerable duration can frequently be cured by the employment of properly selected spectacles. As a rule, children do not at all dislike wearing glasses, and even when only three or four years old will take good care of them and keep them from injury.

Short-sight or **myopia** does not usually make itself apparent so early as hypermetropia, as it is much less frequently the cause of squint. It is most commonly first detected when the child goes to school, it being remarked that it cannot see clearly figures drawn on a black board, or letters of large type, at a distance. Children suffering from short-sightedness are not unfrequently punished for errors which seem faults due to inattention and stupidity, but which are really attributable to the imperfection of their sight. When a child complains that it cannot read or see distinctly what is quite apparent to other children at the same distance, the possibility of the existence of short-sightedness should always present itself to the teacher or mother. The existence of **astigmatism** is usually discovered in the examination of the eyes when short-sightedness or long-sightedness has been suspected, one or other of these usually predominating in an astigmatic eye, and calling for correction before the astigmatism is dealt with.

CHAPTER XVI.

HINTS UPON NURSING CHILDREN DURING ILLNESS.

DUTIES OF A NURSE—OBSERVATION OF THE PATIENT—RESPIRATION—PULSE—TEMPERATURE—THE CLINICAL THERMOMETER—HYGIENE OF SICK-ROOM—CLEANLINESS—VENTILATION—TEMPERATURE—LIGHT AND SUNSHINE—HYGIENE OF INVALID:—CLEANLINESS—CLOTHING—FOOD—ADMINISTRATION AND APPLICATION OF REMEDIAL AGENTS—MIXTURES—POWDERS—EXTERNAL APPLICATIONS—WARM FOMENTATIONS—SPONGIO-PILINE—POULTICES—LINSEED POULTICE—BREAD POULTICE—STARCH POULTICE—APPLICATION OF DRY HEAT—OF COLD—COMPRESSES—COUNTER-IRRITATION—STIMULATING LINIMENTS—MUSTARD PLAISTERS—POULTICES—TURPENTINE STOUPS—MEDICATED APPLICATIONS—SEDATIVE LINIMENTS—OINTMENTS—LOTIONS—SYRINGING OF EARS—APPLICATIONS TO THROAT—LEECHES—MANAGEMENT OF INFECTIOUS DISEASES—DISINFECTANTS—THEIR ABUSE.

Duties of a Nurse during Illness.—The duties which a nurse may be called upon to perform during illness may be most conveniently described under three heads,—the observation of the patient, the maintenance of the patient and the sick-room in thorough sanitary order, and the administration and application of remedial agents.

I. Observation of the Patient.—This duty, one of the most interesting to a careful and enthusiastic nurse, is also, in the case of illness in children so young as to be unable to describe their sensations and to indicate sources of discomfort and pain, one of great importance. The medical attendant only sees his patient for a short time daily, and must depend upon the intelligence and watchfulness of the nurse for an accurate account of any symptoms which may have presented themselves in the intervals between his visits. Nurses desirous of satisfactorily fulfilling their duties should train themselves to note carefully, and to report conscientiously, anything with reference to the patient which may throw light on the character or progress of the illness. It is not for the nurse to judge of the value of any symptom which may present itself; its existence should merely be remarked, and related to the medical attendant on the first opportunity.

An enumeration of the principal facts upon which the nurse is expected to afford information to the doctor in attendance will include, in the first place, an intelligent description of the general demeanour of the patient, whether restless, irritable, quiet, som-

nolent, or cheerful. It will also include an account of the appetite of the invalid, of the quantity of food taken, and of the amount of sleep obtained during the night. The nurse will also be relied upon to mention any alterations which may have occurred in the appearance of the invalid, the presence of any pallor or flushing of the face, of any sickness, of delirium, of twitching of the muscles, or generally of any phenomena indicative of a departure from health. When cough is present, she should be able to describe in general terms its frequency and character; and if expectoration exists, to indicate its appearance and amount. She should also be in a position to state the frequency with which the bowels and kidneys have acted, and to give a description of the character of their excretions. In her daily ablution of the invalid she is afforded an opportunity of observing any unusual appearance of the skin; and the existence of any eruption or rash, however slight, should always be remarked, as its presence may be of much significance.

There are three special symptoms which nurses are expected to observe and report upon, and about which it is desirable that they should possess some information.

1. The first of these is the **frequency of respiration or breathing**. In many diseases of the heart and lungs the frequency of breathing throws much light on the severity and progress of the illness, and an exact record taken at different periods of the day is of much value to the medical attendant. It is customary to describe the frequency by counting the number of respirations or acts of breathing occurring in one minute, the enumeration being effected with the aid of a watch provided with a seconds' hand. In general, there is no difficulty in distinguishing each act of respiration by watching the movement of the chest, which rises and expands during inspiration, and falls and contracts during expiration. When the breathing is so shallow as to render the movement inconspicuous, it may be felt by placing the hand gently on the front of the chest. Not unfrequently the successive acts of inspiration are quite audible, and can be counted by attentive listening. Sometimes, more especially when breathing is difficult, each inspiratory act is accompanied by dilatation of the nostrils, by watching which the rapidity of breathing can be estimated.

The normal frequency of respiration in a healthy child varies from twenty to twenty-five breaths per minute; in disease it may increase beyond eighty per minute, or fall below fifteen. When the nurse has enumerated the acts of breathing in one minute, she should make a written note of the number, and the hour at which the observation was made, and should at the same time remark any

peculiarity connected with the respiration, such as irregularity in rhythm, or the presence of wheezing, snoring, or hissing sounds.

2. The second special symptom which the nurse is expected to record is **the frequency of the pulse**.

The pulse, which beats synchronously with the heart, and indicates the frequency and to some extent the strength of its action, is usually felt about an inch above the base of the thumb, on the outer side of the wrist, where an artery of medium size passes over one of the bones of the fore-arm. This artery is selected chiefly on account of its superficial position and its relation to the bone behind it, which forms a resisting surface against which the artery can be pressed by the fingers. Every artery in the body pulsates in a similar manner, and when from some abnormality of position of the *radial* artery, as it is named, the pulse cannot be felt in the usual position, an artery on the inner side of the wrist may be utilized, or the pulsations of the heart itself against the wall of the chest may be counted. In counting the pulse in the usual position, one or two fingers are laid upon the artery, which they press gently against the bone behind. The pulsations are usually easily recognised as successive gentle beats against the fingers, and are counted with the aid of the seconds' hand of a watch. A convenient method is to count the number of beats in four successive quarters of a minute, and to add the four numbers together to arrive at the number of beats per minute, which is recorded as the pulse rate. By taking the pulse in this way, its regularity or irregularity is ascertained, as well as its frequency.

The Normal Pulse in Children varies from about 120 beats per minute in infancy to about 90 after the age of two years. Very slight disturbances are apt to increase the frequency considerably, and with only moderate fever a rapidity of 150 or 160 beats per minute may be attained. On account of the extreme susceptibility of the action of the heart to comparatively small influences, the information given by increased rapidity of the pulse in disease in children is not by any means so valuable as that afforded in the case of adults; its importance, however, increases with the age of the child, while abnormal slowness is always a symptom of much value, and generally one of serious import.

3. The third special symptom to be recorded by the nurse is the **temperature of the patient**, a symptom of much significance and value to the medical attendant. To ascertain the temperature of an invalid, the nurse makes use of a thermometer of peculiar construction, called a *clinical thermometer*. This instrument differs

from an ordinary thermometer chiefly in the fact that the thin column of mercury contained in it does not fall when exposed to cold, although it rises when exposed to heat, the height of the column of mercury at any time thus indicating the highest degree of heat to which the thermometer has been exposed. Another point of difference is that although the mercury does not fall when exposed to cold, it can be shaken or knocked gently downwards until the column recedes almost entirely into the bulb of the thermometer. A third distinctive point is that the range of the scale is much more limited than in an ordinary thermometer, generally extending from about 95° F. at the lower end to 110° F. or 112° F. at the higher end. The reason for this limitation is that this range represents practically the extreme variations of the temperature of the human body in disease.

The Normal Temperature of the Human Body in Health is remarkably constant at all ages and under all circumstances, seldom varying more than three or four tenths of a degree above or below 98.4° F., which is generally marked on clinical thermometers as the normal point. Some slight difference is noticed according to the position in which the thermometer is placed when the temperature is taken. Most commonly the bulb of the thermometer is placed within the armpit, while the arm is pressed closely against the side; but in certain circumstances a more accurate record is obtained by placing the bulb of the instrument under the tongue, while the stem is held between the lips. In the latter position the thermometer usually registers a temperature one or two tenths of a degree higher than when placed in the armpit. In the scale of a clinical thermometer each degree is usually divided by four small lines, the space between each of which represents one fifth of a degree; the half of such space thus represents one tenth of a degree, which is represented in writing by a decimal figure. Before taking the temperature of a patient, the nurse must "set" the thermometer by shaking down the column of mercury until it falls one or two degrees below the normal point of 98.4° F. This is most easily managed by giving the instrument a few sharp jerks, or by holding it in one hand, with the bulb downwards, and striking that hand gently against the other, taking care to avoid injury to the thermometer. When properly set, it is placed either in the armpit or under the tongue of the patient, and left there for four or five minutes, the time required varying with the sensitiveness of the thermometer. It is then removed, and the height to which the column of mercury has risen is read off in degrees and tenths of degrees, and noted in decimal notation. For example, if the mercury has risen to

exactly the middle point between 100° F. and 101° F., its height is recorded in 100.5° F. ; if it has risen to four-fifths of a degree above 100° F., it is registered in 100.8° F. It is desirable to note in writing at once both the height of the temperature and the hour at which it has been taken.

When any variation from the normal heat of the body occurs during illness, it is almost invariably an increase of temperature which is observed. Feverishness, which is a very common characteristic of many disorders, involves increase of temperature, varying in different cases from one or two, to seven or eight degrees. Under ordinary circumstances of illness accompanied by fever, it is seldom that a temperature higher than 104° F., or 105° F. is observed ; but in severe cases the temperature of the invalid may rise to 107° F. or 108° F., or even further. Any temperature exceeding 105° F. is generally indicative of considerable severity of disease. Reduction of temperature below the normal point occurs sometimes to a slight extent in illnesses where much weakness exists, and in convalescence from acute diseases ; the reduction seldom exceeds one or two degrees, and does not as a rule give rise to anxiety.

II. Hygiene of the Sick-room and Patient.—The second department of the duties of a nurse is the maintenance of the sick-room and patient in perfect sanitary order. The sanitary requirements of a sick-room are cleanliness, pure air, regulated temperature, and light, including as much sunlight as possible ; of an invalid, cleanliness, suitable clothing, and appropriate food. Some suggestions fall to be made under each of these heads.

Cleanliness of the Sick-room.—The maintenance of cleanliness is one of the most important duties of a nurse ; it has been said, indeed, by Florence Nightingale, the originator of scientific nursing, that “the fear of dirt is the beginning of good nursing.” Not only must the bed and bedding upon which the child lies be kept scrupulously clean, but every part of the room and its contents should be carefully supervised, and all dust and dirt removed. When possible, carpets and stuff curtains should be taken out of the room in which an invalid is residing ; if desired for the sake of appearance, one or two rugs which can be removed from the room and shaken well every day, may be substituted for the carpets, while light washing curtains may replace the stuff ones. All unnecessary furniture should be dispensed with, not only because it affords a refuge for dirt, but also because it occupies space which may be more satisfactorily filled with fresh air. The floor of a sick-room should not be swept, but should be rubbed over carefully with a wet cloth, and furniture should be kept clean in the same way. The ordinary process of what is called

"dusting" generally consists of removing dust from a conspicuous place where it can be seen, to an inconspicuous place where it is out of sight but equally capable of doing harm, and is quite inappropriate to the sanitary wants of a sick-chamber. No dishes with foods or drinks should be allowed to remain in the room longer than they are required for use; they should always be removed and cleaned immediately. This remark applies even more strongly to sanitary utensils, such as bed-pans, and urinary receptacles; these should always be removed from the room, with a cover over them, immediately after they are used, and not brought back until again wanted.

It is most important in the interests of the invalid that the bed and bedding should be maintained in as clean and well-aired condition as possible. From the human skin, both in health and in illness, vapour is constantly excreted, containing impure emanations, which are absorbed by the clothing and by the coverings of the bed. It is necessary that these should be removed from the bedding by frequent airing, otherwise they accumulate to such an extent as to be positively injurious to the invalid. In severe illnesses of some duration the most convenient method of maintaining purity of the bedding is to have two separate beds—one for day use and the other for night use; and to air the bed-clothes thoroughly every day, by exposing them for some hours either to the rays of the sun in a thoroughly ventilated room, or before the flame of an open fire. When this arrangement is impracticable, a double set of sheets should be used, and changed morning and evening, being thoroughly aired before being replaced on the bed.

Ventilation of the Sick-Room.—The air in every inhabited room is constantly undergoing contamination from the various impurities excreted from the lungs and skin of the persons living in it; and in order that the atmosphere of the room may not become injurious to the inhabitants, it is necessary that some arrangement should exist for the continuous removal of the impure air, and for its replacement by a fresh and pure supply. The substitution of the pure for the impure air takes place in two different ways. In the first place, air, like other gases, possesses the property of "diffusion," by which is meant that when two gases of any kind, such for instance as oxygen and nitrogen, or pure and impure air, come in contact intimately, they intermingle closely with each other, instead of remaining separate as two fluids, oil and water for example, would. The interstices of the windows and doors of a room, the open chimney, and the door afford facilities for this intermingling, and contribute considerably to satis-

factory ventilation. But the more important factor in ventilation is the quality which air possesses, in common with other gases and fluids, of becoming heavier when its temperature is reduced, and lighter when its temperature is raised. The heavier air tends naturally to fall and to displace upwards the lighter air, which is pushed out at any convenient outlet by the cool air entering at any available inlet. Most of the agencies which tend to render the atmosphere of a room impure tend also to raise its temperature, so that the temperature of a room requiring fresh air is usually higher than that of the external fresh air surrounding it. The heavier external air is thus constantly attacking and invading the lighter internal air, and driving it outwards laden with its acquired impurities.

In any room unprovided with special arrangements for ventilation, the fresh and pure air enters by the interstices of the window, and generally of the door also, while the warm and impure air finds its exit usually by the chimney. If no chimney exists, the fresh air entering by the interstices of the window will expel the contaminated air through those of the door; but the interchange of air will be much slower than when a chimney exists. The importance of the chimney of a room as an aid to ventilation is not unfrequently overlooked; and indeed, from ignorance, the chimney is sometimes rendered useless by the closure of the flue, when no fire is required. Unless other means of ventilation have been specially arranged, chimneys ought always to be left open, and to be kept clean. When a fire is burning in the grate, the value of the chimney as an exhauster of impure air is much enhanced, the greatly increased temperature of the air in the chimney resulting from the fire beneath giving rise to a continuous upward current, which aids most effectively in ventilating the room.

The risks to be avoided or overcome in ventilating a room, when the external temperature is considerably lower than that of the interior, are the undue lowering of the temperature of the room, and the occurrence of "draughts" or currents of cold air. These must be obviated by admitting the fresh and colder air in such a manner as to intermingle thoroughly with the warmer air within, and in such quantity as not to unduly depress the temperature. Generally speaking, the opening of the upper part of the window to a small extent affords the most convenient ingress for fresh air, as it then comes immediately in contact with the warmed air near the ceiling of the room, and is raised in temperature while falling downwards through it. Another convenient entrance for pure air can without much difficulty be arranged in the middle of the window by

raising the lower sash one or two inches, and filling up the space left below by a block of wood fitted for the purpose. A space is thus formed between the upper and lower sashes communicating with the external air, which on entering is directed upwards to the ceiling, and thus becomes warmed.

When the external temperature is too low to admit of any part of the window being continuously open, the atmosphere of the room can be occasionally freshened by opening the window widely for two or three minutes occasionally, at the same time covering the child's head as well as its body thoroughly with the bed-clothes. This should not be done, however, in cases where great uniformity of temperature is essential to the treatment.

In such cases, and in others where ventilation by open windows is undesirable, the door of the room may be utilised to admit air which has already been partially warmed in its transit through the house. When a door is left partially open to admit fresh air, it should always be fixed in position by a small wedge, or by a weight placed on either side, as any noise occasioned by its accidental movement is irritating to an invalid.

When fresh air is introduced by any of the methods mentioned into a room of fair size, no "draughts," as a rule, will be perceived. If, on account of the shape of the room, or from other causes, cold currents of air are found to be present, the bed of the patient must be placed in such a position as not to be affected by them; or their course must be diverted by the employment of movable screens. The necessity of efficient ventilation should always be kept in view by a nurse; in all cases of illness it is of much value, in many cases it is of absolutely vital importance to the welfare of the invalid.

Temperature of the Sick-Room.—The maintenance of a fairly uniform temperature in the sick-room is called for in most diseases of any severity, and in a climate so variable as that of England claims considerable attention from the nurse. It is very seldom that the external temperature, even during the day, remains as constant as is desirable in many cases of serious illness, while the very great difference between the temperature of midday and midnight, at almost all seasons of the year, renders it absolutely necessary to resort to means and appliances for artificially modifying the degree of warmth of the invalid's chamber. For the purpose of satisfactorily regulating the temperature, a thermometer should be placed in some part of the room in such a position that it is not subjected to the direct rays of the sun or of an open fire.

The temperature at which a sick-room should be maintained will vary somewhat with the character of the illness, and with the

wishes of the medical attendant. Generally speaking, it should not be allowed to fall below 60° F. or to rise above 65° F. In some cases of illness, more especially when the lungs are affected, a constant temperature of 70° F. may be demanded; and even a higher temperature than this may be exceptionally useful, in diseases where artificial moisture as well as elevated temperature is called for.

When attainable, the rays of the sun should always be utilised for raising the temperature of an invalid's room, in preference to any artificial source of heat. These rays not only warm the atmosphere, but also purify the air, while in addition they undoubtedly exercise a beneficial influence on the progress of many diseases.

When the rays of the sun are not available, recourse must be had to artificial sources of heat, and of these, open coal fires are to be preferred to any other methods of raising the temperature of a room. The one drawback to their employment is the occasional disturbance to the patient involved in the addition of fresh coals, and in the use of the poker. The former difficulty is, however, easily overcome by wrapping up previously small quantities of coal in paper parcels, each sufficient for one addition to the fire, and placing the parcels quietly, as required, on the top of the burning coals. If this is done judiciously, and a good burning coal be selected, the use of the poker may generally be dispensed with altogether.

When gas fires are employed in a bedroom, great care must be taken that the ventilation is satisfactory, and that the up-draught of the chimney is sufficient to carry away all the noxious fumes resulting from the combustion of gas. Unlike the smoke of coal, the products of combustion of gas are invisible, but are none the less injurious. Fortunately, however, their presence in the atmosphere in any appreciable quantity can usually be detected by the sense of smell. Gas fires dry the atmosphere much more than coal fires, and for this reason are ineligible in cases of disease of the throat and lungs, in which generally a very moist atmosphere is desirable. To some extent this defect may be remedied by the use of water-evaporating dishes in the proximity of the gas fire, but it is seldom that even by their aid a perfectly satisfactory condition of the atmosphere is attained.

It is seldom that any measures have to be taken in England to reduce the temperature of an invalid's room, there being usually no risk or discomfort involved to the invalid in a rise of temperature of several degrees beyond what is considered desirable for the particular disease, such as would result from a fall to the same

extent. When it is considered necessary to cool the atmosphere of the room, the exclusion of the rays of the sun by dark blinds, and the free opening of windows and doors, will generally effect the end in view.

Light and Sunshine in the Sick-room.—The value of light and sunshine in the treatment of disease has been much insisted on of late years. Irrespective of the close relationship between light and cleanliness, evidence has shown conclusively the near connection between light and vitality; the processes of nutrition and assimilation are found to progress more satisfactorily, and the power of resistance to noxious influences to increase, in proportion to the abundance of light. In cases of illness where there exists intolerance of light, a screen should be arranged if possible to protect the eyes of the invalid while the light is admitted to the rest of the room, or curtains may be hung temporarily on one side of the bed; but the whole room should not be darkened unless by the doctor's orders, given for the purpose of utilizing the darkness in the treatment of some particular disease. Apparently the beneficial influence of light belongs only to the natural light proceeding directly or indirectly from the rays of the sun, so that the propriety of artificial light at night must be decided on other grounds, it being kept in view that all artificial lights, except electric lamps, are potent agents in the contamination of the atmosphere of the room.

Cleanliness of the Invalid.—In all cases of illness, where no special reason exists to the contrary, invalids should be washed completely twice a day, morning and evening. In doing this, care must be taken that the patient is not unduly exposed to cold. Each part of the body should be attended to successively, carefully washed with soap and warm water, and then dried before the succeeding part is commenced. Much care should be taken that the drying is thorough; the towels used for this purpose should be perfectly dry and slightly warmed. When any irritation of the skin exists, some dry absorbent powder, such as powdered starch, should be dusted on after the drying is completed, but the application of the powder should never be used as a substitute for the efficient employment of the warm towel. Special attention should be given to the folds of the legs and arms, and to the recesses behind the ears. After washing and drying the invalid carefully, the nurse should brush and dress the hair, and, when necessary, attend to the teeth and mouth; and the patient should be made generally as "tidy" as possible. A habitual appearance of comfort and neatness in the patient will always reflect credit on the nurse.

In the case of young children, who can be handled easily and

dried quickly, the ordinary warm bath may be used for ablution, even in serious illness. Care must, however, always be taken in using it to regulate the temperature of the water accurately with the thermometer; the medical attendant will generally prescribe the degree of heat most suitable. Where no special reason exists to the contrary, a temperature of 98° F. is usually eligible. Unless the temperature of the room is high, the bath should be given in front of an open fire, as there is danger of chill on removal from the bath, resulting from rapid evaporation of the water on the surface of the body. To assist in obviating this risk, the child immediately on being taken out of the bath should be enveloped in a soft warm towel, and no part of the body should be left uncovered until the drying is completed.

Clothing of the Invalid.—The best material for the dress of children confined to bed is merino or flannel. The qualities sought for in the dress are warmth, lightness, and absorptive power, the last quality being of at least equal importance with the first. From the human skin are constantly thrown off impure secretions, partly in the form of vapour, partly in solution and suspension in the fluid perspiration. Unless these secretions are properly absorbed by the clothing, they condense and dry upon the surface of the skin, interfering very materially with its healthy action. As an absorptive material, merino has some advantages over flannel, being more porous, but good flannel possesses the three qualities required in reasonable sufficiency. The clothes should always be made so as to cover properly the arms and legs, as well as the body. In young children it is convenient to have the night-dress long enough to admit of its being tied in the form of a bag beyond the feet, when there is a tendency to become uncovered through restlessness.

Whatever the material chosen may be, it is always necessary that the dress should be changed with sufficient frequency to prevent it becoming disagreeably charged with the secretions emanating from the skin. The vaporous element of these secretions may be removed by hanging the garment in a current of fresh air, or in front of an open fire; but the matter suspended in the fluid portion can only be extracted by careful washing of the clothing. To allow of the frequent removal of the gaseous impurities, it is desirable always to have two dresses in use at the same time, one for the day and one for the night, and to air each well in front of a fire before clothing the invalid in it. As the fluid secretions consist largely of water, it must always be borne in mind that garments when taken off require to be dried well, as well as ventilated thoroughly.

Food of the Invalid.—Difficulties of feeding do not present themselves to the same extent in the illnesses of children as they do in those of adults. For the nutrition of children, in disease as in health, milk is the sheet-anchor upon which reliance is placed, and it is very seldom that absolute distaste of this food is observed, unless indeed there is actual pain in the act of swallowing, from irritability of the throat or mouth. In the comparatively few instances in which milk, and foods made with milk, are disliked, recourse must be had to chicken tea, veal tea, and beef tea thickened with some farinaceous food, preferably one of the malted foods; or those foods may be given made with water, and rendered more nutritious by the addition of a small quantity of cream. The addition of a little isinglass or gelatine also aids sometimes their digestibility, and may render them more palatable.

The expressed raw juice of meat is often of much value in cases of very serious illness in children; preserved preparations of this, such as Valentine's Beef Juice and Caffyn's Liquor Carnis, are convenient and eligible.

In all cases of serious illness, the nurse ought to keep a written record of the amount of food actually taken by the child, noting the hour at which each quantity is taken. Such a record is of much value to the medical attendant as a guide to the proper treatment of the patient.

III. The administration or application of remedial agents forms the third head under which the duties of a nurse have been classified. As the administrator of disagreeable medicine, the nurse probably presents her least popular aspect to her juvenile patients. While many of the other functions of a nurse towards her patients are succeeded at once by increased comfort, and are recognised by children as being intended for their well-being and happiness, the effect of medicine taken internally is not generally so immediate as to demonstrate to the young patients its utility. No doubt much has been effected of late years in making medicines in a more palatable form, and in facilitating their administration; but even the most skilful pharmacist finds it difficult sometimes to disguise the taste of medicines, the use of which under certain circumstances may be essential to recovery. It is in the administration of such medicines that the influence a good nurse acquires over her patient exhibits itself. It is very remarkable how quickly even a very young child will learn to appreciate the value of a nurse who does her work well, and will undergo unpleasantness if assured that benefit is to be derived from it. To acquire this influence a nurse must not only know her duties, but must also have gained the confidence of her patient by **absolute**

truthfulness. Children are most sensitive in this respect, and if a nurse is foolish enough to induce a child to take for the first time a disagreeable medicine, on her false assurance that it is pleasant, she will create a want of trust which will ever afterwards diminish her usefulness. Children of from one to two years are quite old enough to comprehend, when they are told that something unpleasant has to be done to gain future benefit; and if they have not been already "spoilt" in some way, as a rule they will summon up their courage to do the disagreeable thing, relying with confidence on the assurance of the nurse whom they have learnt to trust.

In the **administration of mixtures**, perception of the taste is much diminished by giving immediately before and immediately after the medicine a little milk or water. The milk or water taken immediately before the mixture forms a thin coating over the tongue and palate which protects them from the medicine, and that following its ingestion carries away any trace which may be left of its taste. This method is also particularly applicable to oils, such as castor and cod-liver oils. Castor oil is a medicine which has often to be administered to children, and which is usually rather repulsive to them. If the quantity to be given is poured into the centre of a little milk in a glass, and some water taken immediately before and after, the taste of the oil will often not be perceived at all. Cod-liver oil is often rather liked by children, when only a small quantity is given at first, and gradually increased; when it is disliked, it may be given similarly to castor oil, or a little orange wine may be used as a vehicle in place of milk.

Powders are, as a rule, best given mixed with a very little water in a spoon. If small, they may be placed in the middle of a little jelly, or may be mixed with some sugar and taken on the tongue dry, some water being swallowed immediately afterwards. Powders are occasionally enclosed in gelatine capsules or in wafer cachets, but it is difficult to induce children to swallow these whole, and if broken the taste of the powder is perceived at once. This remark applies also to the compressed tabloid which have been introduced within late years, and to medicine made up in the form of coated pills. As a rule, there is no objection to giving a child some harmless sweet after taking medicine, and if its taste is consulted in this matter, the inducement will often be sufficient to make it take disagreeable medicine without much reluctance.

External applications are made use of to a very considerable extent in the treatment of disorders in children, being employed for four distinct objects. In the first place, they are used for the

purpose of increasing or diminishing the temperature of any part of the body ; in the second, they are applied in order to maintain the moisture of any part ; thirdly, what are called counter-irritating applications are directed to the relief of pain and inflammation ; and lastly, medicated preparations are applied to the skin in order that they may be absorbed, and may thus exercise their special medical effects. In practice it is usually convenient and advantageous to employ applications which combine two or more of these objects, and most of those described will be found to do this. The combination which is most frequently called for in illness in children is the application of heat associated with moisture, a combination usually effected by the use either of warm fomentations, or of poultices of various kinds.

Warm Fomentations.—A piece of flannel about four times the size of the surface to be covered with the fomentation is taken, and folded twice upon itself, so as to afford a pad of four thicknesses of flannel, of the required size. This pad is laid upon a strong towel, which has been placed across an empty basin, and boiling water is poured over it until the flannel is saturated, any surplus water running off through the towel into the basin beneath it. Each end of the towel is then taken hold of and twisted, so that the flannel is wrung out within the twists of the towel. The towel is then untwisted, and the flannel taken out and applied to the invalid, after the nurse has satisfied herself that it is of proper temperature. The flannel is immediately covered with a piece of waterproof sheeting or of oiled silk, to prevent evaporation and consequent rapid cooling, and to protect the dress of the patient from moisture. When applied efficiently in this manner, flannel often affords great comfort, and is preferable to poultices on account of its being cleaner, as well as lighter in weight. On the other hand, it does not retain its heat so long as a well-made poultice, and requires consequently to be more frequently replaced. Speaking generally, moist applications of warm flannel, to be thoroughly effective, should be renewed every half-hour. They ought always to be prepared in the immediate vicinity of the patient, otherwise they are apt to cool rapidly in being carried.

A material called spongio-piline, which consists of a thick felt coated on the outside with a waterproof layer, is occasionally employed as a substitute for flannel and waterproof sheeting, being saturated with hot water, and pressed before being applied. It has no advantages over flannel, except perhaps that of convenience, while it does not retain its heat so long, and is somewhat apt to render damp the clothes of the invalid.

Poultices may be made with a variety of materials, linseed

meal, oatmeal, bran, starch, rice, and bread being all made use of under different circumstances. The material most commonly employed for the purpose in England is linseed meal, and the detailed description of poultice-making which follows applies specially to this material; oatmeal and bran poultices, however, are made in an exactly similar manner. A short description of other poultices will be added, and their special uses will be mentioned.

Linseed Poultices.—To make an ordinary linseed meal poultice well, it should be made quickly; and to enable one to do this, all the materials must be ready before the actual process of making commences. To begin with, there must be something as a basis on which the poultice is to be spread. In home nursing, the material most commonly made use of is old linen or cotton, a piece of which is cut, rather larger than the size of the poultice it is intended to receive. Thick brown paper does fairly well for the purpose, but the edges are apt to be felt slightly rough by the patient. In some hospitals ordinary tow is used. A bowl or basin, proportioned in size to the poultice to be made, is also necessary, and a wooden or metal spoon for stirring the poultice properly. A little hot water in another basin or cup is also desirable, and a kettle filled with absolutely boiling water must be available. Everything being now prepared, a certain quantity of boiling water is poured into the basin, the quantity depending upon the size of poultice required, and being learned only by experience. The nurse then takes the spoon in one hand, and some linseed meal in the other, and lets the meal fall rapidly into the water, which she stirs continually with the spoon. Enough meal is added to make the poultice of fair consistency, and the mixing should be completed when the whole of the meal has been added. The mixture thus made is then spread on the linen or cotton prepared for it, and the surface smoothed over by the spoon, dipped into the hot water in the other basin or cup. The edges of the linen or cotton are then doubled over so as to cover the edges of the poultice, which is now ready for use. Nurses differ to some extent in the thickness with which they spread the poultice, and one or two considerations have to be kept in view in deciding the matter. The more thickly it is spread, the longer it will retain its warmth, but its weight will of course be greater; and if the poultice is at all a large one, and placed on a part where the weight will be felt, as on the front of the chest, the weight may be of some importance. In children, indeed, if there exists any difficulty of breathing, the pressure of a heavy poultice on the chest may do material injury. As a general rule,

about half an inch will be found a convenient thickness, if the poultice is to be placed in a position where pressure will not be injurious; when the poultice is one of exceptional size, or is to be placed on a part where pressure may do harm, a thickness of a quarter of an inch will be sufficient. Linseed poultices should always be applied without anything intervening between the linseed and the skin. The two best tests of a well-made linseed poultice are, that it can be rolled up on itself and unrolled again without any damage to its surface, and that it can be applied to the skin, and afterwards removed, without any of the poultice remaining adherent to the skin. Sometimes, when the linseed meal is rather dry, a little olive or linseed oil will require to be added to the poultice after it has been thoroughly mixed, in order to attain the degree of perfection indicated. It should be remarked that commonly two different preparations of linseed are sold under the name of linseed meal. The first kind is sometimes called also "crushed linseed," and is simply the pure linseed crushed and bruised into a condition of meal; the other is a powder made by grinding linseed cakes (which are commonly called oil-cakes), from which the linseed oil has been expressed by pressure. The former is naturally the softer and more oily, but is apt to ferment and become somewhat rancid; when used for poultices, care should be taken to obtain it quite fresh. The second is the more eligible preparation; and when it has been rendered too dry by excessive pressure to extract the oil, the addition of a little fresh linseed oil to the poultice removes the defect. Poultices retain their warmth considerably longer than flannel wrung out of hot water, and accordingly do not require to be replaced so frequently. If well made and of considerable thickness, especially when protected on their outside by flannel, or wool tissue, or thin waterproof sheeting, it will not usually be found necessary to change them more often than once every three hours, and sometimes they will retain their warmth even longer than that period.

Bread Poultices are best made from the crumb of stale bread, which should be powdered and stirred into boiling water, the dish in which it is made being afterwards allowed to stand in boiling water for five minutes, to allow the bread crumb to swell thoroughly. They are usually employed only when very small poultices are required, being especially useful for application to the eyelids in inflammatory conditions. Unlike linseed poultices, bread poultices may be made in bulk and kept warm or reheated, so that they are convenient for use when very frequent change of the poultices is considered desirable. They should always be applied directly to the skin, without any intervening tissue. Occasionally

milk is made use of in their preparation in place of water, increasing to some extent the soothing qualities of the poultices.

Starch Poultices are used mainly for allaying irritation of the skin in various skin diseases. The starch is powdered and mixed with cold water, and then boiled for a few minutes until a proper consistence is attained. It is spread for use upon some linen or cotton, and applied warm directly to the skin.

Application of Dry Heat.—Heat without moisture is not unfrequently employed for the purpose of maintaining or restoring the natural temperature of any part of the body, when the circulation has been locally enfeebled, or when any chill has been experienced. It is most conveniently applied by means of flannels heated at a fire, or rolled round a hot brick, or a bottle filled with water; or by the use of small bags filled with sand or salt which has been heated in an oven, previously to being poured into the bags. In making such applications, great care must be taken that the amount of heat is not sufficient to do any injury. The nurse should always test the temperature with her cheek or with the back of her hand, bearing in mind that the heat takes some little time to penetrate through a few thick folds of flannel. Especial care is requisite in cases of disease of the nervous system involving paralysis, in some instances of which the reaction to heat is excessive, while the sensitiveness is diminished or lost, so that severe injury may result from excess of heat while the invalid is quite unconscious of any discomfort.

Cold applications are very frequently employed both for the relief of pain, and in the treatment of local and general diseases. The simplest way of applying cold to any part of the body is by placing upon it thin cloths wetted with cold water, and changed as often as they become either warm or dry. Such applications cool the part on which they are placed in two different ways. In the first place, the water by which they are saturated is cooler than the skin to which they are applied, and when placed in contact with it absorbs some heat from it. In the second place, water exposed to air evaporates rapidly, and this process of evaporation is accompanied by considerable abstraction of heat from surrounding parts, and especially from the part with which the water is in contact. It will be obvious, therefore, that to utilize both these methods of cooling the part, the cloth which is saturated with the water must be thin, and must be freely exposed to the air, so as to admit of rapid evaporation. For ordinary purposes part of a linen handkerchief folded double answers very well; and the changes must be made as frequently as it is found to become warm, and thus to lose its power of

abstracting heat directly from the part. It will not unfrequently be found that the changes have to be made so often as to become tedious both to the invalid and to the nurse, and some other device has to be adopted to attain the same result. It will be perceived that the same object would be achieved if a constant supply of fresh cold water could be conveyed to the folded handkerchief, the water as it becomes warmer being removed by evaporation, and replaced by the fresh supply. This is not difficult to arrange by means of a thin skein of cotton or worsted, and a small jar or jug to hold the water. If the jar be suspended beside the patient a little higher than the part to be kept cool, filled with cold water, and a skein of worsted or cotton be carried from it to the folded handkerchief, immersed at one end in the water in the jar, and in contact with the handkerchief at the other end, a constant stream will flow from the jar to the handkerchief, which will be thus kept always wet. The volume of the stream will depend mainly on the thickness of the skein, and partly on the difference of height between the jar and the handkerchief; by altering these one is able to regulate satisfactorily the amount of water supplied, so that the bed of the patient does not become moistened. It is well, however, for a careful nurse always to have a small piece of covered mackintosh sheeting under any part to which cold water is to be thus applied.

When a greater degree of coldness is demanded, the water may be artificially cooled by the addition of ice, or of some salt which abstracts heat from the water during solution, such as chloride of ammonium or nitrate of potash. Or the same result may be attained by the addition of some fluid to the water which will render the process of evaporation more rapid, such as methylated spirit or vinegar. A still further degree of cold can be produced in any part of the body by the application of melting ice, enclosed in some form of waterproof bag. When ice is melting into water, the water formed remains at a temperature just above 32° F., known as the freezing point, until every fragment of ice has melted; so that if ice is broken in pieces and placed in a bag, a very uniform low temperature is maintained as long as the process of melting is proceeding. India-rubber bags for the purpose of containing ice, and shaped according to the part to which they are intended to be applied, are obtainable from surgical instrument makers; but it is not difficult for an intelligent nurse to improvise a bag which will be quite as effective as those sold for the purpose. In some cases an ordinary sponge-bag will suit very well, the mouth of it being carefully tied round a large cork, after the ice has been put into it. Very convenient ice-bags can be made by

the nurse, of any size and shape required, out of the thin gutta-percha tissue sold by all chemists, the edges being cemented together by the application of chloroform. The gutta-percha tissue is doubled, and cut to the size and shape wanted; the free edges are then turned over, and are made to adhere by brushing a little pure chloroform quickly along them, and pressing them until they adhere firmly together. A very little practice will give the necessary quickness and neatness in making such ice-bags, and they will be found very convenient and useful. The gutta-percha tissue used for the purpose should always be good and comparatively new, otherwise there will probably be found in it some minute holes which will leak uncomfortably as the ice melts.

Ice is generally bought in large blocks, and it will fall to the nurse to break these blocks into small lumps, suitable for introduction into the bags. This is best done with a small hammer and some pointed instrument, such as a bradawl or a shoemaker's awl. By pressing the point of the awl on the ice, and giving a smart rap on its head with the hammer, the block will be found to split quite easily into small fragments. Until the ice is required, it is best left in the original large blocks, melting much more slowly thus than when broken up. The blocks should be rolled up in flannel, and placed in such a position that the water resulting from their melting is able to drain away as quickly as it is formed. A good plan is to tie some flannel or a piece of blanket loosely across the top of a pail or deep basin, to place the ice in the hollow of it, and to cover it over with another piece of the same material. At first sight, it may appear rather unreasonable to "keep ice warm" in this way; the ground, however, for doing so is practically the same as that on which flannel is recommended to be used for clothing. Flannel is a bad conductor of heat, and when used for clothing it is intended to prevent the escape of heat from the body; in the case of ice it is intended to prevent the admission of heat to the ice, in both cases equally impeding the transmission of heat.

In certain cases of essential fevers, and more particularly in scarlet fever and typhoid fever, when the temperature tends to become dangerously high, it is usual to attempt reduction by *the application of cold to the whole body of the patient*, and it is necessary for a nurse to know how to carry out this treatment when ordered by the physician in attendance. Some reduction of temperature, and considerable gain in comfort to children suffering from febrile illnesses, is obtained by frequent sponging with cold water, to which is sometimes added with advantage a small quantity of vinegar. The effect of the sponging in diminishing

temperature is increased if the patient is not dried for two or three minutes after the sponging, the evaporation from the skin being useful in promoting the abstraction of heat.

When cold sponging is not sufficient to lower the temperature, a fact to be ascertained by the use of the clinical thermometer before and after its employment, recourse is often had to packing in a sheet wrung out of cold water. To carry out this treatment satisfactorily, the bed of the patient, or, where possible, another bed in the same room, must be specially prepared by having a waterproof sheet, with a blanket above it, spread over the sheet upon which the invalid usually lies. While the patient lies on this, covered with another blanket, a sheet is taken and soaked in cold water, wrung gently so as only to press out the excess of water, and then folded round the invalid, underneath the blanket with which he is covered. Reduction of temperature is observed by occasional use of the clinical thermometer, and when the sheet becomes warm by contact with the body, it is replaced by another treated in the same way; this is repeated until the required reduction in temperature is attained. The patient is then dried, and the bed restored to its original condition; or, where a second bed has been made use of, he is carried back to the one from which he was taken. It is not usually considered desirable to take advantage of the cooling effects of evaporation in this treatment; the reduction of temperature is effected almost entirely by the actual contact of cold water with the patient.

The application of simple moisture, independently of increased or diminished temperature, is frequently desirable in the treatment of some internal diseases, as well as in the case of external wounds. This is usually effected by means of what are termed **compresses**, which consist of linen or cotton or lint folded in one or two thicknesses, dipped in warm water, and covered with oiled silk or gutta-percha tissue. If lint, which is the best of the three materials mentioned for the purpose, is employed, it is generally sufficient to use it of only double thickness. The doubled lint is cut to the size required for the compress, and a piece of oiled silk or gutta-percha tissue is cut, so that its edges overlap in every direction the lint by from a quarter to half an inch. The lint is then soaked in warm water, and laid on the oiled silk or gutta-percha tissue, the overlapping edges of which are folded over so as to cover in the edges of the lint, and if necessary stitched in position. The compress is then applied to the part desired, and secured in its place by a thin flannel or calico bandage. Compresses of this kind are very valuable in many cases of inflamed throat, being applied from ear to ear under the chin, and secured

by a bandage over the head. When the compress is used for application to a wound, it is better not to double the edges of the gutta-percha tissue or oiled silk inwards; but having cut the lint to the exact size of the wound, to make the tissue overlap a little all round, the overlapping part resting on the healthy skin around the wound. Compresses do not require frequent changing; if the oiled silk is properly applied so as to completely cover the lint, they will remain quite moist for more than twelve hours.

Treatment by counter-irritation is founded partly on the scientific knowledge that irritation excited on an external part of the body relieves the congestion of blood which accompanies inflammation in a neighbouring internal part, by diverting a portion of the supply of blood directed to it, and partly on empirical experience that the discomfort and pain of internal inflammation is relieved by external irritation. The empirical experience will be obvious to any one who has applied whisky or iodine to the gum for the relief of incipient gum-boil. The amount of irritation which it is desirable to apply in any particular case to the external surface will vary with the extent and character of the internal inflammation which it is intended to affect and remedy; and to some degree also with what the patient is able to bear. As a general rule, it may be stated that the greater the extent of skin over which it is intended to apply the counter-irritant, the less the amount of irritation set up ought to be. A very mild mustard poultice may be used to cover the whole of the chest and back of an invalid, while a pure mustard plaister would only be applied to a small part of the chest at one time, and that part would be allowed to recover to some extent, before the plaister was repeated on another part of the skin. Simple counter-irritation in children is generally effected either by friction with some stimulating liniment, such as ammonia or turpentine liniment, or by the application of an irritant plaister, such as that made of mustard or capsicum.

Stimulating Liniments.—Some little skill and practice are required before a nurse can make effective use of liniments which are intended to be applied by friction. Much the most effective means of using them is by the uncoiled hand. A little of the liniment is poured into the palm of the hand very slightly hollowed, and, being conveyed to the part to which it is to be applied, is rubbed into the skin by gentle but firm and uniform friction. This friction may either be in a circular direction or upwards and downwards, according to the part where the application is made; in some cases, friction only in one direction is permissible, and then the hand must be lifted from the skin to return to the starting-point. On the chest and abdomen circular friction

is generally best, on the lower part of the back the friction should be upwards and downwards, and on the legs and arms usually only upwards. The amount of liniment to be rubbed in, and the length of time which is to be devoted to the rubbing, must vary so much with individual cases that no general rule can be given. As the friction has usually a pleasant and somewhat soothing effect, the patient is not likely to complain of some time being occupied by it; but unless a nurse is practised in the process, she will find the fatigue considerable after a few minutes.

Mustard plaisters are prepared by spreading on some base, such as brown paper or thick linen or cotton, or, what is best of all, a few layers of tissue paper, a thin coat of mustard which has been mixed with water, exactly as mustard is commonly prepared for use as a condiment. Care must be taken to elicit the strength of the mustard by thorough mixing; and it should be spread uniformly to the size required, with the thickness of about one-tenth of an inch. The edges of the base should then be turned over, to prevent the escape of any mustard, and the surface should be covered with one layer of tissue paper, or of very thin linen or fine muslin, before the plaster is applied to the skin. Usually from fifteen to twenty minutes' application will produce the desired amount of counter-irritation.

For the application of counter-irritation, in combination with the soothing and curative effects of heat and moisture, it is usual to make use of either mustard poultices, or turpentine stoups, made of warm moist flannels sprinkled with turpentine. Spongio-piline wrung out of hot water and sprinkled with turpentine is also an excellent appliance for carrying out this treatment.

Mustard poultices are generally made of either linseed meal or oatmeal, combined with mustard in varying proportions. For children a common proportion is one-fourth of mustard to three-fourths of meal; a poultice of this strength will usually be borne well for an hour at a time, and will act as a very efficient counter-irritant. For young babies a proportion of one-fifth of mustard will generally be quite sufficient. The most usual method of making them is to mix the mustard and meal first, and then to add boiling water with constant stirring until the poultice arrives at the proper consistency. This is not, however, the best way, as mustard does not yield readily the essential oil, upon which its strength depends, to boiling water. A better way is to mix the mustard well first with cold water, then to add the boiling water, and proceed to make the poultice by adding the meal as was described in making linseed poultices. Or, in accordance with the directions of the *British Pharmacopæia*, the poultice may be

made first as a linseed poultice, and the mustard then added and mixed well with much stirring. The central fact to be kept in view is that the strength of mustard has to be developed by intimate mixture with water; and that the greater part of the effect of it is lost, unless care be taken in its preparation. Mustard poultices should be applied, like linseed poultices, directly to the skin of the invalid.

Turpentine stoups are made by sprinkling warm moist flannel prepared as has been described on page 166, with a small quantity of pure turpentine. The quantity will vary with the size, and with the degree of irritation desired; it will generally be found that half a teaspoonful, sprinkled carefully over a square foot of flannel, will be sufficient to produce within an hour decided redness of the skin, with some feeling of heat and irritation. Care must be taken that the turpentine is distributed equally over every part of the surface, and that the flannel is not allowed to become cool before being applied. After the amount of irritation desired has been attained, it may be kept up for an indefinite time by further applications of stoups prepared with a diminished quantity of turpentine, or by a succession of simple warm fomentations.

When **spongio-piline** is employed it is sprinkled with turpentine exactly in the same way as the flannel, after being dipped in very hot water and pressed.

Medicated Applications.—Different medicines, generally of a sedative character, such as opium, belladonna, and aconite, sometimes of a counter-irritant and stimulating character, such as iodine, are applied directly to the skin, sometimes being painted on, or rubbed into the skin after being made into a liniment or ointment with some oleaginous material, at other times used in combination with one or other of the applications already described. A very common and useful combination is laudanum, which is a solution of opium, with linseed poultices or flannels wrung out of boiling water, the laudanum being sprinkled over the surface, after the poultice or flannel has been prepared in the usual way.

Sedative Liniments are usually rubbed into the skin in the manner described as being employed with counter-irritating liniments; if prepared with spirit and not with oil, in the case of liniment of aconite, they should be painted on the skin and allowed to dry in. •

Ointments may either be rubbed in, or may be spread upon lint and laid upon the part intended to be affected. The medical attendant will usually give precise instructions about their application.

Lotions are usually employed in a manner similar to the water

used for the purpose of maintaining simple moisture, as described on page 172, the lint being saturated with the lotion, and covered over with oiled silk or gutta-percha tissue ; sometimes they are simply dabbed on and allowed to dry. In the application of lotions *to the eyes*, it is most convenient to use a small piece of absorbent cotton wool, which is saturated with the lotion, and used like a sponge for bathing the eyes. It is usually necessary that some of the lotion should go inside the eyelids to be thoroughly effective ; this is easily managed by drawing downwards the lower eyelid with the finger, and at the same time squeezing the cotton wool a little, so that a few drops of the lotion fall from it into the eye. No injury can possibly result from drawing down the eyelid in this way, if care is taken to rest the finger not on the eye itself, but on the ridge of bone which projects below the eye.

The **interior of the ears** has occasionally to be *syringed* with warm water, or with prescribed lotions. The most convenient syringe for the purpose is one made of a small india-rubber ball, with a glass or ivory ear-piece attached. This is filled by immersing the end of the ear-piece in the water or lotion, and after compressing the ball to empty it of air, allowing it to expand so as to draw into it the fluid which is to be employed. The ear-piece is then directed to the entrance of the ear, but not pressed into it, and the ball being compressed, the fluid is injected into the ear, running out again after it has reached the drum of the ear, at the farther end from the external opening. A small bowl should be held under the ear to receive the returning fluid. In very young children it will be found most convenient to syringe their ears when in their bath, and then no bowl need be used to receive the returning injection.

Applications to the interior of the throat are best made with a camel's-hair brush fitted with a straight handle. If the child has been taught to open its mouth properly, very often it will not be necessary to use any means for depressing the tongue ; if, however, the throat cannot be seen on account of the tongue, the handle of a teaspoon should be used to press it downwards. The child should be placed facing a window, while the nurse takes the brush in one hand and the teaspoon in the other, and immediately on depressing the tongue, paints with the solution the part of the throat which requires attention. The essential qualities for success in this little operation are quickness and neatness. If the brush is soft, there is no risk whatever of doing any injury to the throat ; and the more quickly the painting is effected, the less will the child usually resent the process.

The application of leeches is occasionally very useful for the

relief of pain and the reduction of inflammation. In order to cause them to bite properly, the part to which they are to be applied should be sponged carefully with soap and warm water, dried, and then moistened with a little fresh milk. The leeches are then taken from the box in which they are contained, and placed quickly on the moistened part, care being taken that they have not time to adhere to the fingers of the nurse, before reaching the patient. Where it is important that they should adhere to a particular spot, the box with the lid off and the leeches in it may be inverted over the part until they adhere, after which it should be removed; or the leeches may be put into a small wineglass, the open end of which can be placed against the skin. When they have once bitten, they should be allowed to adhere until they drop off. If they are unconscionably long in doing this, sprinkling their bodies with a little common salt will induce them to relinquish their hold. There is often considerable tendency to bleeding from the minute openings leeches make in the skin, immediately after their separation, and the nurse must be careful to watch for and arrest this as soon as it is perceived. This can generally be done effectively by the application of a small pad of dry lint, made to press on the opening by means of a bandage; if this does not arrest the bleeding, a small piece of ice should be applied to the wound.

Precautions relating to Infectious Diseases.—On the occurrence of infectious disease in a house, it sometimes falls to the duty of the nurse to make arrangements for the **isolation of the patient**, in order to prevent the spread of the infection. To be effective, isolation must always be thorough and complete. The patient and the nurse should be allotted one or two rooms, or, when possible, a whole floor of the house; and no one else in the house should be permitted to enter these rooms on any pretext whatever. When it can be managed, the rooms should be separated from the rest of the house by a large sheet of washable material, calico or cotton being the most suitable, which should be kept constantly moist with water mixed with some disinfectant fluid, such as "Sanitas Fluid," or carbolic acid. The solution should be of the strength of about one part of the disinfectant fluid to thirty parts of water. When the rooms cannot be isolated in this way, a similar sheet should be fastened outside the door of each of the rooms used for the patient and nurse. As the nurse must leave the isolated rooms once or twice daily for a walk and for other necessary purposes, a washable dressing-gown or other garment, which is large enough to completely envelop her, should be placed just outside the isolated area; and this should be put on by the nurse each time she leaves

the rooms, and put off again before she enters them. When leaving the house for her daily walk, the enveloping garment should accompany her to the outside door of the house, and being left there, should be put on again on her return. Every nurse who is in constant attendance on a case of infectious disease should be made to take a walk of at least an hour daily. If this is not insisted upon, her health is exceedingly likely to fail, and she may break down entirely at the critical period when her services may be in urgent request. For the purpose of keeping the air of the house as pure as possible, reliance must be placed on the most thorough ventilation attainable. On the floor below where the patient is, doors and windows should be kept widely open throughout the day, and, so far as the season will permit, during the night also. The windows of unoccupied rooms on the same floor as the patient should also be utilized for ventilation.

Disinfectants in Infectious Diseases.—No confidence is to be placed on the use of disinfectants for the purpose of maintaining the atmosphere pure, and destroying infectious germs. Currents of pure air, and as much sunshine as possible, are the only reliable disinfectants of the air of inhabited houses. Disinfectant and antiseptic fluids can only be relied on when used in solutions of proper strength for washing, and for mixing with excreta before being carried out of the room, but they cannot be added to respirable air in sufficient proportion to have any real disinfectant power. All washable clothing, night-dresses, and bed-linen should be placed in linen or cotton bags when dirty, and should be boiled thoroughly before being sent to be washed, or, where possible, should be retained in one of the isolated rooms until the illness is over, and then sent away for disinfection. Plates, cups and saucers, and other articles containing food should be placed by the nurse, after the food is consumed, in a large basin or small tub outside the door of the sick-room, and completely immersed in a solution of Condyl's Fluid or carbolic acid of the strength of one part in twenty of water.

Water which has been used in washing the patient, and all excreta, should be completely disinfected by the addition of carbolic acid in a proportion of about one in ten parts, before being removed from the room.

The one risk of spreading the infection, if all the precautions mentioned are rightly observed, lies in the passage of the nurse through the house when going to and returning from her daily walk. This is a risk which must be incurred, but care should be taken to minimise it as far as possible. Before leaving the rooms the nurse should wash her hands and face carefully in Condyl's

Fluid and water, about one in twenty in strength, and immediately on leaving should put on the enveloping dress mentioned above. She should walk straight out of the house without stopping to speak with any one, and any conversation she may desire should take place after her return from the walk, before entering the invalid's rooms.

When the illness is over, and the risk of personal infection from the invalid gone, he should be taken, in as little clothing as possible, to a room free from infection, given a complete bath of water with Condy's Fluid or carbolic acid, of the strength of about one in forty, the hair and the head being washed as well as the body, and then clothed in garments which have not been exposed to the risk of infection. The clothing in which he was brought out of the room should be returned to it, and left there until room and clothing are subjected to thorough disinfection. This is usually undertaken by the local sanitary authorities.

It is desirable to repeat and emphasize the fact that disinfectants can never occupy the place properly filled by fresh air and perfect cleanliness; they can only at best act as adjuncts, giving some additional security *after* every possible care has been taken in all other respects.

Abuse of Disinfectants.—In the nursing of non-infectious cases the use of antiseptics and disinfectants is generally unnecessary, and is not unfrequently a cloak for carelessness in cleanliness. It may be laid down as a general rule, that the better a nurse is, the smaller amount of disinfectants and antiseptics she will employ.

CHAPTER XVII.

SOME MINOR TROUBLES OF THE EARLIER MONTHS OF INFANT LIFE.

SEPARATION OF STUMP OF UMBILICAL CORD—OCCASIONAL ULCERATION—
TREATMENT—HERNIA AT NAVEL—MANAGEMENT—INFLAMMATION OF
BREASTS—DESQUAMATION OF SKIN—RED-GUM—JAUNDICE—YELLOW-
GUM—THRUSH—ITS CAUSE—AND TREATMENT—DIARRHŒA—ITS
CAUSES AND TREATMENT—ERYTHEMA AND INTERTRIGO—SAND OR
GRAVEL—CONSTIPATION—ITS TREATMENT—INFLAMMATION OF EYE-
LIDS—METHOD OF APPLYING LOTIONS TO EYE—CLOSURE OF LACHRYMAL
DUCTS—VACCINATION.

Separation of Umbilical Cord.—In connection with the natural process of the separation of the stump of the umbilical cord soon

after birth, some departures from the normal course are occasionally encountered. When the separation proceeds healthily the stump shrinks and dries in two or three days, a very fine line of ulceration is observed at its junction with the skin of the abdomen, and when it drops off on the fifth or sixth day after birth, a small circle of healthy skin, with a minute depression in the middle, is seen in the centre of the abdomen, where the cord was previously attached. Sometimes the stump, instead of drying, becomes more moist and smells somewhat unpleasantly, indicating the existence of decomposition. When this occurs the separation usually progresses more slowly, and the line of ulceration becomes wider and more obvious, and is accompanied not unfrequently with an appreciable discharge of unhealthy matter. The best treatment for this condition is frequent powdering of the stump with some antiseptic dry powder, such as boracic acid mixed with an equal quantity of oxide of zinc, or of powdered starch. If such a powder be dusted well twice daily over the stump and the skin in the vicinity of its attachment to the abdomen, the decomposition is usually arrested, and the separation proceeds satisfactorily. If, after the separation of the stump, a small ulcerating surface is left behind, this should be dusted twice daily with the same powder. Frequently after the separation of the stump, the part of the surface of the abdomen to which it was attached is covered over by a fold of skin, from beneath which a little discharge may be seen to exude, giving rise to the supposition that the matter is coming actually from within the navel. This is never the case; when discharge of this kind is seen, the source of it will always be found, on stretching the skin and distending the navel, in a small ulcerating surface made obvious by the distention. Very frequently this surface takes the form of a small polypus about the size of a small pea, projecting from the central depression of the navel, keeping up the discharge, and causing irritation of the surrounding skin encircling the navel. In treating this condition with antiseptic powder, care must be taken that the powder reaches the ulcerating surface. It is not sufficient simply to dust the powder over the skin of the abdomen; the navel must be distended, and the ulcerating surface brought to view before the powder is applied, so that the application may be efficiently made. When the use of the powder for a few days does not result in complete cure, it may be necessary to touch the surface twice daily with some astringent, such as a piece of blue stone (sulphate of copper); sometimes, when the polypoid growth is large, it is desirable to remove it by tying a thread tightly round it, or by snipping it off with a pair of scissors.

Umbilical Hernia.—In infancy there is often a strong tendency

to the development of hernia at the navel. The wall of the abdomen at that point is often thin and elastic, and when an infant cries lustily, a small part of the bowel is sometimes pushed through the weakened wall, projecting to the size of a large thimble in the middle of the abdomen, and covered only by thin semi-translucent skin. This form of rupture may appear at any time during the first year of life, but is much more common in the earlier weeks. Its presence should not excite anxiety, as, when treated by the application of the belt described in Chapter XV., recovery in time is the invariable result; but care should always be taken in washing the infant that no injury is done to the projecting hernia. When it is large, and appears immediately on the removal of the belt, it is well to have a special india-rubber belt for use during the time that the infant is being bathed, replacing this by the ordinary belt when he is removed from the bath and dried.

Inflammation of the Breasts of Infant.—Infants, both male and female, are somewhat apt to suffer from slight inflammation of the breasts within a few days after birth. The nipples and the small glandular tissue beneath them become somewhat swollen, reddened, and tender to touch, and occasionally there is exudation of a little fluid having some of the properties of milk. The disturbance rarely lasts beyond one or two days, and only exceptionally calls for any treatment. When the swelling is considerable, gentle rubbing with olive oil or with vaseline is useful, and will be found to aid the reduction. Ignorant nurses sometimes fancy that it has some connection with the development of the gland for the process of nursing in later life, and in female children accordingly “assist” by manipulation which not unfrequently results in severe inflammation, sometimes followed by abscess. The exact cause of the glandular disturbance is not known, but its occurrence in male children as well as in female seems to negative the hypothesis of the nurses described above. On the other hand, mothers who are not aware of this peculiar tendency to irritation in infant life are occasionally apt to attribute its occurrence to carelessness of the nurse, and to hold her responsible for what is really a somewhat inexplicable natural phenomenon.

Desquamation of Skin.—Reference has already been made to the desquamation or casting of the skin which follows within two or three weeks of birth. The process is sometimes very obvious, the skin peeling off in very apparent shreds; sometimes, on the other hand, it is so gradual and slight as to be quite unnoticed except by a careful observer. Frequently it is accompanied by some irritation of the skin, which shows itself in the development

of small red spots scattered over the body. These spots are known popularly as **red-gum**, more scientifically as *strophulus*. They vary in size from a pin's head to a split pea, or even more, and project somewhat from the skin, forming up-raised pimples. Sometimes, when the eruption is severe, there is a little watery fluid on the points of some of the pimples, giving them the appearance of small vesicles. These pimples are generally scattered over the greater part of the body and limbs, and last for a few days, gradually fading away. It is very seldom that they seem to be a source of discomfort to the infant, and as a rule no treatment whatever is required.

During the first week of life many infants exhibit symptoms of **jaundice**, the skin and the white part of the eyes becoming stained to a deep yellow colour. The cause of it is not always apparent, but in some cases at least it seems to be due to disturbance of the stomach from fluids swallowed during the process of birth. Beyond sometimes affecting for a few days the desire for food, this form of jaundice does not appear injurious, and usually disappears in from a week to ten days. When the eruption described above as red-gum makes its appearance while an infant is jaundiced, the spots or pimples appear of a more or less yellowish colour; and the popular name of **yellow-gum** has been applied to this combination of jaundice and irritation of the skin. No treatment is required for this form of jaundice; but if the infant is being fed artificially some difficulties of digestion may present themselves, and call for attention, and modifications of feeding such as have been indicated in Chapter XIII. It will occasionally be observed that during the existence of the jaundice the urine of the infant is very high-coloured, and stains deeply the napkins. This is a natural result of jaundice, when present to any extent, and need not give rise to any anxiety, so long as the infant seems in other respects well, and maintains its appetite. Jaundice as described above is of short duration, never probably lasting more than a fortnight. If it continues for a longer period than this it is likely to be due to some more serious underlying condition, and demands medical attention and skill.

Thrush is a peculiar form of inflammation of the mouth and throat affecting most commonly infants, but sometimes also older children, and even adults when in a weak state of health, characterised by the presence of a minute fungoid growth of a yellowish-white colour. If the interior of the mouth of an infant suffering from thrush be examined, the tongue, the interior of the cheeks, the gums, and occasionally the throat, will be observed to be dotted over by small whitish patches, like small flakes of curdled milk.

Each little patch is surrounded with a circle of deepened red colour, and little ulcerated points may be noticed here and there, where the fungoid growth has separated from the interior lining of the mouth. Sometimes the patches of white growth are so numerous that they coalesce, and unite into a continuous membrane lining a considerable part of the mouth. When the patches are small, and the surrounding circles of darker red not very marked, they may be easily mistaken at first sight for flakes of curdled milk ; but the distinction is made without difficulty by attempting to remove one of them with the finger, or with a brush. Flakes of milk are removed with facility, and leave a perfectly healthy surface beneath ; while the patches of fungus are separated with difficulty, and when removed a small superficially ulcerated surface is observed, to which the fungus had been attached. The inflammatory patches covered with fungous growth may continue for an indefinite period, unless cured by appropriate treatment. They frequently extend down the back of the throat, and in severe cases affect also the lining membrane of the stomach. When the disease exists to any extent in the mouth there is usually considerable tenderness, and the infant suffers pain when sucking the bottle or the breast, not unfrequently declining to suck altogether unless very hungry. The inflamed condition of the mouth is almost invariably accompanied by some degree of indigestion, the evidence of which is found in symptoms of pain after the administration of food, occasional sickness, with much sourness and disagreeable odour of the vomited food, and relaxation of the bowels amounting frequently to diarrhœa. The motions from the bowels are generally green in colour and mixed with gelatinous mucus, and are somewhat irritating to the skin around the opening of the bowel. This often consequently becomes reddened, inflamed, and sometimes slightly abraded, an appearance which has given origin to the idea that the thrush "passes through" the infant. This idea is erroneous, as the true fungus of thrush is never found on the surface of the skin, and is misleading in suggesting the appearance of the skin as a symptom of improvement in the condition of the mouth.

In children who are properly taken care of, thrush is very seldom a disease of much severity ; but in neglected infants it is not unfrequently the cause of serious illness, and even of death, from exhaustion resulting from the secondary disorder of the digestive canal. The importance to be attached to it depends chiefly on the extent to which its presence interferes with taking nourishment, and on the amount of gastric disturbance associated with its development.

The initial cause of thrush in infants is almost invariably some slight disorder of digestion, resulting from improper food, or from food improperly administered. It is exceedingly rare in children nursed exclusively at the breast, while very common among infants brought up on any kind of artificial food ; and when it occurs its severity seems generally to be in proportion to the carelessness or ignorance of the person in charge of the infant. Uncleanliness of bottles and nipples, and the use of india-rubber tubing, are fertile sources of thrush in hand-fed children. The improper or uncleanly food seems in the first place to cause a slight irritation of the lining membrane of the mouth, which affords a favourable site for the adhesion and development of the fungus, which is frequently present in milk ; and the fungus, having once obtained a foothold, increases the original irritation, and spreads itself gradually over the mouth and throat. Accepting this explanation, it is obvious that the best way to prevent the occurrence of thrush is to conduct the artificial feeding of an infant with the greatest possible care as to digestibility and to cleanliness. During the earlier weeks more especially of artificial feeding, at which time thrush is most likely to occur, symptoms of indigestion such as sickness, pain after ingestion of food, and unhealthy motions from the bowels, should be watched for, and treated when necessary by slight alterations either of the food itself, or of the manner of administration. The interior of the mouth should be examined daily, and the first indication of the presence of thrush should be met by suitable treatment. This treatment should consist both of attention to the general health, and especially to the digestion of the infant, and of local treatment to the mouth and interior of the cheeks affected with the fungus.

From what has been already said of the relation of thrush to indigestion, it will be understood that generally some little change in the form of food will be indicated. The presence of thrush practically proves the existence of some previous indigestion ; and this must be combated by some alteration in the preparation, or the form, or the dilution of the artificial food supplied. Indications of the kind of change desirable will be found in Chapter XIII.

The Local Treatment to the mouth consists firstly in the maintenance of the greatest possible cleanliness, and secondly in the application of some astringent and antiseptic remedy. If an infant's mouth be examined a few minutes after it has taken food, it will be remarked that a little of the food remains lurking in various recesses of the mouth, such as between the gums and the cheeks, or under the tongue. When thrush is present, such small

remnants of food decompose rapidly, and not only increase the irritation of the mouth already present, but also afford nourishment for the fungus, and assist its growth. It is very essential therefore, in the treatment of thrush, to clean the mouth of the infant thoroughly immediately after each meal. This is best effected with a clean handkerchief, a small part of which is dipped in clean warm water, and brushed lightly but thoroughly over and around the interior of the child's mouth. When the mouth has been made quite clean, a little glycerine of borax should be applied to the interior with a camel's-hair brush, or with the finger. The treatment of cleaning the mouth thoroughly and applying the borax should be continued assiduously after each meal, until all traces of the fungus have disappeared, and the lining membrane of the mouth seems quite healthy. For the irritation which sometimes appears round the opening of the bowel great cleanliness and the application of a little vaseline will usually be sufficient; in some cases thorough dusting with a powder made of equal parts of boracic acid, oxide of zinc, and powdered starch will be found more rapidly effective in promoting the cure.

Diarrhœa.—Infants nourished with artificial food are considerably more prone to attacks of diarrhœa than those nursed at the breast; and as diarrhœa is apt in such children to be not only persistent, but to give rise to further and more serious results when neglected, early attention should always be given to its cure. Diarrhœa may commence simply with increased frequency of action of the bowels, while the motions remain of normal colour and consistency. In health, infants usually have from two to four actions of the bowels daily. When the frequency of the actions exceeds this number, it should be considered as slightly abnormal; and when there are more than six actions in the twenty-four hours some steps should be taken to effect a reduction. More commonly diarrhœa commences with an alteration in the character of the motions, in combination with increased frequency. Instead of being yellow in colour and uniform in consistency, the motions will be observed to be whitish or clay-coloured; small hard masses may be noticed mixed with gelatinous mucus or with watery fluid; or the motions may consist mainly of masses of curdled milk covered with mucus of a green colour and mucilaginous consistence. Not unfrequently the infant will be noticed to suffer some pain immediately before the passing of the motions, and to have apparently a sense of relief for some time after. Even when diarrhœa commences with actions of normal appearance, if it persists, the motions always alter in character, assuming one of the forms mentioned above, or becoming almost entirely watery,

with a slight sediment of yellowish or brownish flakes. As diarrhœa progresses, the motions may become much more frequent, sometimes occurring as often as once every hour. After persistence for two or three days, irritation of the lower bowel is often set up, showing itself in a tendency to strain after each motion, and sometimes in the presence of a little blood mixed with the mucus in the motion. Occasionally diarrhœa is complicated with some sickness; but much vomiting is not common unless the disorder of the digestion, from which the diarrhœa proceeds, has progressed so far as to set up acute catarrhal inflammation of the stomach and bowels, a condition of things of so serious a character as invariably to call for skilled medical assistance.

The cause of diarrhœa is almost invariably to be found in some disturbance of digestion, and the first step to its cure is, where possible, to discover what the source of the disturbance is. Frequently this will be found to be of a temporary and apparently trivial character. In the case of infants nursed at the breast, some slight indiscretion of diet on the part of the mother or wet-nurse, or even some mental disturbance or worry, may be sufficient to alter the lacteal secretion to such an extent as to induce indigestion and diarrhœa. When thus caused, diarrhœa is usually of very short duration, and passes off without calling for any remedial measures. In artificially fed infants some change in the quality of the milk, due perhaps to its derivation from a different cow, or to some change in the fodder of the cow from which the milk is usually obtained, may be the disturbing cause; or some slight decomposition of the milk undetectable to ordinary sense, but sufficient to affect the sensitive nerves controlling an infant's digestion, may have taken place from atmospheric or other causes. As a general rule, it will be found that the digestion of infants fed artificially is more sensitive and more easily deranged than that of babies nourished on the secretion of the human breast; and the disorders following derangement in such infants are apt to be more severe and of longer duration. Not unfrequently an attack of severe diarrhœa is the climax of impaired digestion which may have existed for some little time in a modified form. The artificial food of the infant may for some weeks have been partially digested with perhaps only slight discomfort and a little abnormal appearance of the motions, and without any apparent further cause diarrhœa may set in, and continue in a troublesome manner. In many cases an inspection of the motions of the infant will throw light on the cause of the illness. If, in the beginning of the diarrhœa, hardened masses of curdled milk are found in the motions, it may be assumed that some alteration in

the milk supplied to the infant or in its preparation is the cause of the disturbance.

The treatment of diarrhoea in infants should be directed, in the first place, to the removal of any possible cause, and in the second place to soothing and giving rest to the irritated stomach and bowels. When the ingestion of some temporarily affected food is suspected, it is well to commence the treatment by the administration of a small dose of castor oil, in order to remove any of the offending material which may still remain in the bowel. Usually about half a teaspoonful of castor oil for an infant of a few weeks old will be sufficient to effect this; if the baby is three months old, one teaspoonful will form a proper dose. After this has been given, the stomach should be allowed to rest without any milk or farinaceous food for some time. Under ordinary circumstances infants will never be found to suffer any injury from remaining without such foods for even twenty-four hours occasionally when the stomach is disordered, if some fluid nutriment be supplied at intervals in the form of thin barley-water, or of diluted chicken or veal tea. Not unfrequently, when diarrhoea has been caused by some alteration in the quality of the milk, there exists for one or two days afterwards almost complete inability to digest even pure diluted milk, and much the most satisfactory course to pursue is to withhold it altogether, until the digestive power recovers itself. After twenty-four or forty-eight hours, during which only barley-water or chicken-tea has been given, the milk or farinaceous food, more diluted than usual, may be given again in a tentative manner; and with care the customary food may be gradually resumed. When the disturbance is only slight, complete stoppage of the usual food may not be necessary; but it will generally be found advisable to increase its dilution for some little time, and to lengthen as far as possible the intervals of administration, giving in the intervals, if the baby is restless or thirsty, small quantities of thin barley-water. When there is evidence of indigestion having continued for some little time prior to the diarrhoea, it is proper to make an alteration in the diet of the child. Speaking generally, this change should be in the direction of some more easily digested food; thus, for instance, if cow's milk diluted with water has apparently not been agreeing with the infant, dilution with barley-water may be tried, or resort may be had to humanized or to peptonized milk. It must be kept in view that when diarrhoea has once commenced, the digestive powers are distinctly diminished temporarily; and accordingly not only must the food given be more diluted than would otherwise be necessary, but a longer interval must be allowed to elapse between meals, as the digestive

process is slower as well as more feeble. It is unfortunately the case that infants suffering from diarrhœa have often an abnormal craving for food, and will ingest much more than even a healthy baby could digest ; in cases having this character, mothers and nurses must be careful not to mistake a morbid craving for healthy appetite. The infant must be soothed as far as possible, and induced to wait during the proper intervals between meals, and when this cannot be managed, some innocuous fluid must be given in the intervals, such as small quantities of thin barley or rice water, or even occasionally a small teaspoonful of plain cold or tepid water.

As a general rule, the less medicine given to infants suffering from diarrhœa, the more rapid their recovery will be ; and no medicine at all, with the exception of one small dose of castor oil at the commencement of the illness, should be given unless sanctioned by medical advice. The symptoms which would indicate the urgent necessity of skilled advice are mainly great frequency of the motions, the presence of vomiting, a wasted and pinched appearance of the face of the infant, tendency to coldness of the hands and feet, and indications of twitching and convulsions. The appearance of any of those symptoms demands immediate attention.

Erythema and Intertrigo.—The redness and irritation around the opening of the bowel which frequently results from diarrhœa has already been described, and its proper treatment indicated. A similar affection of the skin of the thighs, the groins, and the front of the abdomen not unfrequently arises in infants from some irritating quality in the urinary secretion. As a result of some form of indigestion in babies, the urine is apt to become high-coloured and of offensive odour. Urine of this description seems to be very irritating to the delicate skin of the infant ; and unless the diapers are changed frequently, and great care in cleanliness is taken, the skin with which the wet diapers come in contact becomes inflamed, reddened, and sore-looking, developing a condition which is technically known as **erythema**, or, when occurring chiefly in the folds of the groins, as **intertrigo**. The irritation often exists to such an extent as to cause exfoliation of the superficial layer of the skin, and abrasions result here and there, approaching a condition of slight ulceration. •Sometimes in place of the general redness, an eruption of small papules or pimples occurs, with normally coloured skin intervening between the papules, the heads of which are often slightly flattened and abraded. There is usually no difficulty in determining the nature of this irritation, and distinguishing it from other erythema-

tous or papular eruptions. Its limitation to the part of the skin covered by the diapers, and its association with disagreeably-smelling urine, are usually quite sufficient to indicate its character. To effect a cure quickly, attention must be given to the diet of the child, while at the same time soothing applications are made to the inflamed surface. It will often be found when intertrigo occurs that the diet of the infant has been somewhat too rich or too abundant, and it will be necessary to increase the dilution of the food, or to limit the quantity. In other cases, the condition of the urine, together with the appearance of the motions, will lead to the conclusion that the food is being imperfectly digested, and an entire change of diet may be called for. The local treatment should consist mainly of very frequent changing of diapers, great cleanliness, and the application of some soothing powder or ointment. As far as possible, the diaper should be changed immediately the baby has passed water, however frequently this may occur; and at least twice or thrice daily the skin affected should be bathed thoroughly, dried carefully, and powdered well with plain starch powder, or with a mixture of powdered starch and oxide of zinc. When this is insufficient to effect a cure in a few days, it may be necessary to apply some ointment in place of the powder, after the bathing and drying. The best ointment for this is one made of equal parts of zinc ointment and Carron oil; this is very soft and cool, and forms a most soothing application for the irritated skin. Nurses are rather prone to blame the inefficient washing of diapers as the cause of intertrigo in infants, but it is very doubtful if this is ever the real cause of the irritation. There is no doubt, however, that it is often induced by laxity in changing the diapers with sufficient frequency.

Sand or Gravel.—In close relation to the condition of urine resulting in intertrigo is that which is characterised by the deposition of what is popularly known as "sand" or gravel, and scientifically as uric acid. When this affection of the urine exists in infants, the sand is observed as a brick-red or yellowish-red deposit remaining upon the surface of the diaper, after the urine has been absorbed. If the diaper is dried carefully the deposit will be noticed as a sandy powder which can be grated between the fingers. Its occurrence is not uncommon in young infants, and unless persistent, or of very frequent recurrence, is of no serious import. When it is observed for some days continuously, an indication is given of some disorder of digestion, due generally to a somewhat too rich diet, and some little alteration must be made to obviate this. When infants are taking farinaceous food, the presence of sand may indicate an insufficiency of fluid diet and

consequent concentration of the urine, an error easily rectified by increasing the dilution of the food with milk or water. The presence of uric acid or gravel in the urine of infants is apt to give rise to some pain in passing water; and the child will be observed to refrain as long as it possibly can from doing so, and to cry during the act or immediately afterwards.

Crying during micturition should always excite suspicion of some irritating character of the urine, and inspection of the diapers will generally afford a satisfactory explanation of the discomfort involved in the act. If no abnormal appearance of the urine is detected, the discomfort in micturition is usually due to some slight irritation or malformation of the external urinary organs of the infant, and an examination should be made in order to detect any abnormality. In male infants this will sometimes be found in abnormal length or narrowness of the foreskin, a condition which will call for medical aid, and usually for the slight operation of circumcision. In female infants abnormal conditions are not common, but occasionally the urinary passage is partially blocked by a small membrane stretching across the opening, which requires to be removed by a slight incision.

Constipation, or confinement of the bowels, is a not unfrequent trouble presenting itself in infants, more especially perhaps in those not very robust at their birth. It has already been stated that usually an infant passes three or four motions in the twenty-four hours. A smaller number would not be considered abnormal if the motions were of fair size and of proper consistency; but if only one or two motions are passed in the twenty-four hours, and these small and somewhat hard, the condition would be described as one of slight constipation; while, if the child has no action of the bowels for one or two days at a time, a degree of confinement exists which calls for careful attention. When constipation is present to this extent, the motions will usually be found to be very hard, and to cause considerable discomfort, if not pain, to the baby in passing them; sometimes, indeed, the baby strains so hard, and has so much difficulty in passing the motion, that a little blood exudes from the edge of the opening of the bowel.

For the immediate relief of constipation existing to the extent described above, it is usually desirable to administer an injection of either water, oil, or glycerine. If the child exhibits a tendency to pass the motion by occasional straining, it is best to assist by an injection of one or two ounces of olive oil, administered by means of a pear-shaped india-rubber injectionsyringe of a size just sufficient to hold the quantity indicated, and fitted with an ivory or vulcanite nozzle. When there is no tendency to natural

action of the bowel, this should be stimulated by the injection of a teaspoonful of pure glycerine, introduced by the syringe described for the purpose in Chapter IV. If the glycerine injection does not produce a proper action of the bowel in a quarter of an hour, a full injection of warm water should be given with an ordinary Higginson's syringe, the injection being administered slowly, and as much water being used as it is possible to inject. If more is injected than the infant can accommodate, it will always return at once by the side of the nozzle, so that no fear need be entertained of causing injury by injecting too large a quantity. Fuller directions for administering an enema of this kind are given in Chapter IV., p. 25, and are equally applicable to infants as to adults.

General Rules for Prevention of Constipation.—After immediate relief has been afforded, steps must be taken to prevent the recurrence of the constipation, and to remove the tendency to it. To effect this, it is usually necessary to make some alteration in the infant's diet. Some foods are more constipating than others, and a change should be made from those to some of a more laxative character. Generally speaking, malted foods assist in maintaining the regular action of the bowels, while, on the other hand, peptonized milk sometimes produces a tendency to constipation. If the food previously given to the infant has been digested satisfactorily, with the exception of the confinement of the bowels, it is not usually desirable to give up its use altogether; the better course is simply to substitute once or twice daily another food which may assist in promoting the action of the bowels. In some cases where infants are fed on diluted cow's milk, the addition of a little cream aids in preventing constipation; in similar cases also the administration of a quarter of a teaspoonful of cod-liver oil once or twice daily is effective and advantageous.

One farinaceous food, **Scotch oatmeal**, is often exceedingly effective in the treatment of constipation, and can not unfrequently be digested by very young infants if properly prepared. It is, however, a somewhat rich food, and in some children produces considerable irritation of the skin. Its employment in cases of persistent constipation should always be tried, the amount given being limited when any signs of irritation, in the form of "heat-spots" or slight eczema are exhibited. Oatmeal is prepared in various degrees of coarseness, and sometimes one form can be digested satisfactorily when another form is unacceptable.

So far as possible, the use of laxative medicines should be avoided with infants. When the constipation persists in spite of various changes of diet, it is best to excite the action of the bowel, when necessary, by injections of olive oil or glycerine, waiting for

the time when the increasing age of the baby will admit of greater variety of diet.

Inflammation of the Eyelids is a trouble not unfrequent in young infants, which calls for much care in order to prevent serious ulterior results. Its presence is usually indicated first by the collection of a little watery matter at the inner corner of the eye, which tends to run down the cheek. This is accompanied, or immediately followed, by some swelling of the eyelids, which are kept persistently shut, and are reddened and discoloured as well as swollen. If the eyelids are separated with the fingers, the eyes are seen to be injected, and more or less covered with the watery matter, which runs out on the separation of the lids. When the inflammation is slight, and attended to at its commencement, it usually subsides entirely in a few days. The great point in the treatment is excessive **cleanliness**. The eyes must be bathed carefully three or four times a day, or oftener if necessary, with clean warm water, or warm milk and water, and care must be taken not to expose them to a bright light. In bathing the eyes, it is not sufficient to bathe merely the outside of the lids, but the water, or milk and water, must be introduced within the lids, so as to wash thoroughly the surface of the eye. It is not difficult to do this if it is done in a proper manner.

Application of Lotion to Infant's Eyes.—The best method of doing it is here described, two persons being required—one to hold the baby, and the other to apply the lotion properly. The one holds the baby on the knee, with its face towards her, while the other sits down immediately opposite, and in close proximity to the first, having at her right-hand side a bowl or cup containing the lotion, and some small pledgets of clean absorbent cotton wool, and, spread over her knees, a soft thick towel. This latter person separates a little her knees, with the towel lying upon them, while the one holding the baby lowers its head backwards until it rests on the towel, in the hollow between the knees of the person sitting opposite. The head of the infant is grasped gently but firmly between her knees, and while the holder of the baby confines its hands and holds its body firmly, the other, holding the head between her knees, has both her hands free to apply the lotion. With her left hand she separates the lids very gently, by pressing on the bony projections above and below the eye, while with the right she carefully bathes the eye with pledgets of wool soaked in the lotion. The process is very simple if done by two persons acting together in this way, and the only precaution necessary is that all pressure on the eyes themselves should be avoided in opening the eyelids. If the fore-finger and middle-finger of

the left hand be used for separating the lids, and care taken that they rest on the bony prominences well above and below the eye, no risk whatever to the eye will ensue, and the lids will be separated to a sufficient extent without much difficulty. Before attempting the separation, it is always well to dry the skin in the neighbourhood of the lids thoroughly with the towel on the knees, otherwise the fingers are very apt to slip. The cotton-wool pledgets should be destroyed after use, as the discharge from the inflamed eyes is contagious; and the towel employed should not be used for any other purpose. When a child is suffering from inflamed eyes, sponges and flannels used for washing it should never be employed for other children, and a special towel should be kept for its sole use, on account of the risk of contagion from the discharge. When the discharge exists to such an extent as to require washing more than two or three times a day in order to keep the eyes clean, medical aid should be had recourse to. Special lotions are then necessary, and neglect of early treatment may be followed by injuries to the surface of the eye which will permanently damage the sight.

Congenital Closure of Lachrymal Ducts.—A condition of things which may be mistaken for inflammation of the eyelids sometimes results from congenital closure of the small canals at the inner corners of the eyes which normally fulfil the purpose of carrying away to the nose the secretions from the surface of the eyes. When these are not pervious, the secretions collect like a tear in the corner of the eye, and run down the cheek, not finding their proper outlet into the nose. This condition of matters does not, however, lead to the swelling and discoloration of the eyelids characteristic of inflammation, but is of course much more persistent, as it continues until by surgical means the passage is made patent. The earlier that this is done the better for the child; mothers should therefore lose no time in drawing the attention of their medical attendant to any persistent accumulation of fluid in the corner of an infant's eye, or to any continued tendency of tears to flow down the cheeks.

Vaccination.—One of the minor troubles of infancy, which is imposed on every child in Great Britain and Ireland by the law of the land, is the discomfort resulting from vaccination. Every baby, unless exempted by special medical certificate, must be vaccinated before it attains the age of six months, for the purpose of protecting it from the possible ravages of small-pox in later life. This is not the place to discuss the arguments in favour of or against this legal requirement; but it is right to point out that, such being the law of the land, it is the duty of

every law-abiding person to submit to it. It is the more easy to do this if it is recognised that compulsory vaccination was established only after the fullest inquiry into its efficacy, and that since its establishment evidence of its protective value has largely accumulated. Usually the most convenient age for the vaccination of an infant is from six to eight weeks after birth. The child at that period has generally made a fair commencement of life, and become accustomed to its diet; and will usually bear the slight disturbance caused by vaccination, without deteriorating at all in health. At this age an infant is not acutely sensitive to any discomfort, while, if the vaccination is postponed until the child is three months old, it has a greater appreciation of the localised discomfort of the vaccinated arm, and may even irritate it further by the restless movements resulting from the presence of the inflamed spots.

Vaccination consists of the introduction into the skin of **vaccine lymph**, a fluid obtained either from a vesicle on a calf, or from a vesicle on a baby already vaccinated. If the little operation is carefully performed, lymph obtained in either of these ways is equally eligible, as there is practically no risk of any contamination being conveyed from one baby to another, except through the carelessness of the vaccinator. Lymph derived from the calf is, however, so readily to be obtained at the present time that its use is very popular, and when obtained fresh its results in vaccination are perfectly satisfactory. Vaccination is usually performed on one arm, a little below the shoulder, and the left arm is the more usually selected, chiefly because most mothers and nurses carry infants in their own left arm, and consequently the left arm of the child is less exposed to friction against the body of the person carrying it. There is no reason why the vaccination should be done in any one part of the body rather than another; the arm is selected simply as the most convenient situation. Mothers who dislike the marks which are left upon the arm by vaccination occasionally have their children vaccinated on the leg; but if it is done low down on the leg the kicking of the infant frequently irritates the part during the healing process; while, if placed high up on the thigh, the position is somewhat inconvenient if verification of vaccination marks is required for any purpose in later life.

Normal Progress of Vaccination.—Generally from three to five separate spots are vaccinated on the arm, the skin being either scratched or pricked according to the usual practice of the vaccinator. Practically no pain follows the insertion of the lymph, but sometimes on the first or second day afterwards the infant will be noticed to fail a little in appetite, and be somewhat listless. This

very slight depression usually passes off in twenty-four hours, and about the third day the spots where the lymph was inserted will be noticed very slightly reddened and inflamed, like small pimples. These little pimples increase in size for four or five days, gradually changing into flattened vesicles filled with fluid, and slightly depressed in their centre. When examined on the eighth day after the vaccination, each vesicle is usually about the size of a threepenny bit, of a dim whitish colour, with a slight depression in the middle, and is surrounded with perfectly healthy skin. Within a day or two after this the skin round them becomes a little inflamed, and the vesicles change gradually to a yellow colour, as if matter were enclosed within the thin covering instead of water. The surrounding inflammation in another day or two subsides entirely, the vesicles become harder, and gradually darken in colour, and in the course of a few days dry into hard dark-brown scabs, which usually fall off about three weeks after the vaccination, leaving depressed scars on the arm rather smaller than the scabs which covered them. These scars, which are of a pinkish-red colour at first, become white in the course of a few months, and remain permanent throughout life.

When the development of the vaccine vesicles progresses thus normally, no treatment of any kind is necessary, nor is it essential to take any special measures to prevent the vesicles being injured by pressure or friction. The sleeve of the infant's dress should be loose enough to admit of the arm swelling slightly without suffering constriction, and should not be of a rough or irritating material; but special means of preventing injury, such as various kinds of shields, are entirely unnecessary, and frequently are themselves the cause of irritation. Occasionally, the slight redness and swelling described as occurring normally around the vesicles about the eighth day after vaccination appear somewhat earlier, and become intensified after the eighth day to such an extent as to cause some restlessness and even slight fever; when this happens frequent powdering with boracic acid and oxide of zinc powder is of value in allaying the irritation. At the same time, it is usually desirable to give a small dose of laxative medicine, either in the form of half a teaspoonful of castor oil, or one or two grains of grey powder (mercury and chalk) mixed with a little white sugar. Unless absolutely called for by much inflammation and swelling of the arm, poultices and other moist applications should be avoided, as they are apt to soften the heads of the vesicles and promote ulceration, thus prolonging and delaying the healing process. If the employment of the powder of boracic acid and oxide of zinc fails to allay the irritation in two or three days, some vaseline

spread thickly on a piece of fine linen should be laid upon the inflamed arm. This application should be changed twice daily, and the arm should be sponged gently with warm water before the fresh vaseline is applied.

Sometimes, for no very obvious reason, the vesicles fail to dry properly, and instead of a hard scab being formed, the outer covering softens and suppurates, and on coming off leaves beneath it a small unhealthy ulcer, in place of the pink cicatrix which normally remains after separation of the scab. There is some evidence that this is due, occasionally at least, to some insanitary condition in the atmosphere of the room or house in which the infant is living, and when such ulceration occurs enquiry should always be directed to the possibility of any such contaminating influence. The infant should be taken out in the open air as much as the weather will permit, and every possible care taken to promote its general health. As a local application, nothing is better than the powder of boracic acid and oxide of zinc already mentioned as useful in inflammation of the vesicles. This should be powdered freely night and morning over the ulcerated surfaces, which should be previously cleaned by having warm water poured over them freely from a jug or a sponge held some inches above the arm. Under this treatment the ulcerated surfaces usually quickly assume a healthy appearance, and become covered with a delicate new skin, which in time strengthens into a cicatrix very similar to that which remains when the vaccine vesicles have pursued their normal course.

CHAPTER XVIII.

SOME DISORDERS ASSOCIATED WITH THE PROCESS OF DENTITION.

CONDITION OF NERVOUS SYSTEM DURING DENTITION—DIFFERENCE OF MANIFESTATIONS IN FIRST AND SECOND DENTITIONS—AFFECTIONS OF GUMS AND MOUTH—ULCERS OF MOUTH—DISTINCTION FROM THRUSH—FEVERISH ATTACKS—RESTLESSNESS AT NIGHT—DISORDERS OF DIGESTION—TREATMENT—COLIC AND DIARRHŒA—COLD AND COUGH—FALSE CROUP—BRONCHIAL CATARRH—NECESSITY OF CARE—TREATMENT OF COLD—OF FALSE CROUP—OF BRONCHITIS—CHILD-CROWING—TREATMENT—GENERAL CONVULSIONS—TREATMENT—ABSCESS OF EAR—TREATMENT—NIGHT TERRORS—OTHER MENTAL PECULIARITIES.

Condition of Nervous System during Dentition.—During the two periods of dentition, both when the child is cutting the

first set of teeth, between the ages usually of six months and two years, and when developing the second set between six and thirteen years of age, various disturbances of health are apt to present themselves. While dentition is proceeding the nervous system of children appears to become very irritable; and as a result, slight causes of disturbance, which in general would scarcely produce any visible effect, are apt to be followed during teething by consequences apparently out of all proportion to their influence. In this condition a very slight chill may be the exciting cause of severe bronchitis, while the ingestion of some not very easily digested food may result in violent diarrhœa or even acute inflammation of the bowels. A special feature of this period of life is the facility with which considerable fever with much increased temperature is induced, a condition in itself tending to increase still further the already excitable state of the nervous system. While it cannot be said that any of the illnesses to be described in this chapter are exclusively associated with the eruption of the teeth, they yet occur so frequently during these periods, and when they occur manifest so apparently some relation to the dental development, that it is most convenient to describe them here. Some of them are evidently the direct result of the passage of the teeth through the gums; others, more especially the disorders affecting the nervous system, belong to a class known in medicine as "reflex nervous phenomena," an expression which means here that the irritation of the nerves of the gums, produced by the pressure of the advancing teeth, is prone to relieve itself by some manifestation of irregular nervous discharge in some other part of the body, giving rise, it may be, to muscular spasms or convulsions. The disturbances of health due to teething occur with much more frequency and greater severity during the first than during the second dentition, and the specific descriptions which follow apply only to the earlier process, which takes place usually between the ages of six months and two years, unless where it is specially stated that the second dentition is referred to. It is to be understood that the second dentition is occasionally characterised by similar affections, which however at that period rarely present themselves in the acute form in which they appear during the eruption of the first or milk teeth. In the first place will be described the affections of the gums and mouth which result directly from the eruption of the teeth through the tissues which cover and conceal them for some months after birth.

Affections of Gums and Mouth.—Generally for some weeks or even for two or three months before any teeth make their way through the gums, their appearance is foreshadowed by slight

irritation of the gums, accompanied by an excessive secretion of saliva, which flows occasionally from the mouth of the child, an occurrence generally known as "dribbling." This is usually associated with some slight irritability of temper, shown by a tendency to cry on slight provocation; and is apparently relieved by rubbing and pressure, as the infant will be observed to bite its own fingers or any other substance convenient, and to derive comfort from doing so. It will usually be noticed also that the child when fretful can be soothed by its mother or nurse gently rubbing its gums with her finger. If the gums are examined during this period, they will be found to be somewhat swollen and of a rather brighter red colour than normal. Immediately before a tooth comes through, the gum covering it will often be seen to be very tense and swollen, and at this stage may sometimes be so tender that the child resents any attempt to touch it. This swelling and tenderness subside directly the tooth has made its way through the gum, and a period of comparative comfort ensues until another tooth arrives at the same stage. The amount of discomfort suffered varies very much with different infants. Some cut all their teeth with practically no discomfort, while others suffer pain and become irritable during the eruption of every individual tooth. In this respect it seems to matter little whether the teeth are cut comparatively early or late. As a rule, the double teeth and the canines give rise to more discomfort than the incisors, but this is a rule not by any means without many exceptions. In addition to the irritation of the gums so frequently present, some inflammation of the rest of the mouth is not very uncommon; and this sometimes exists to such an extent as to give rise to small ulcers, which are occasionally seen not only on the tongue, but also on the inside of the lips and cheeks. They are readily distinguished from the little ulcers which occur during thrush, by the absence of any appearance of the white fungus growth characteristic of that disease; moreover, thrush is very seldom observed in children in fair health after the age of six months. The inflammation and irritation of the gums and mouth very seldom exist to such an extent as to interfere materially with the infant taking food; not unfrequently indeed an increased desire for food is observed, the contact with the nipple of the bottle or with the feeding-spoon apparently giving a sense of relief, while the food has a soothing effect upon the inflamed surface.

The irritation of the gums resulting from teething is generally associated with irregular feverish attacks, characterised by abnormally high and capriciously varying temperatures. If the temperature of the child be taken occasionally with the clinical

thermometer, a temporary rise of temperature of three or four or even more degrees will not unfrequently be noticed; and if careful observations are made the alterations in temperature will be found frequent and erratic.

Resulting from this in some measure is the **restlessness at night** which is often remarked. The child awakens suddenly in its sleep and cries out, or is restless and disturbed, kicking with its legs and moving its arms frequently. As a secondary result of the feverishness, **disorders of digestion** are prone to occur, assuming generally the form of diarrhoea with colicky pains giving rise occasional attacks of loud crying, sometimes of vomiting and intolerance of the food which previously had been satisfactorily assimilated.

Treatment of Affections of Mouth.—These various troubles are susceptible of much alleviation by the employment of remedies, some local and some general. For the dribbling alone no treatment is necessary, but when the irritable condition of the gums is troublesome, it is well to rub them once or twice daily with some slight astringent such as glycerine of borax. This should be applied gently with the finger of the mother or nurse. Gentle friction with fresh lemon juice is also frequently of much value in soothing the discomfort. At the same time the occasional use of some mild laxative medicine is advisable, half a teaspoonful of castor oil or a teaspoonful of sweet essence of senna being an eligible dose for a child of one year. When similar discomforts arise during the second dentition mild saline purgatives, such as effervescing citrate of magnesia, are of much value, and are best administered in the morning before breakfast. When a tooth is observed actually projecting under the swollen and tender gum, lancing with a sharp and clean lancet will generally afford immediate relief, and complete the eruption through the gum. For the treatment of the small ulcers on the mouth described above, nothing is better than the application two or three times daily of glycerine of borax; their cure is hastened also by the administration internally of a little chloride of potash, one grain of which to each year of the child's age may be given three times daily. The feverish attacks are generally relieved most quickly by the administration of laxatives, among the most eligible of which are, sweet essence of senna, compound liquorice powder, and Gregory's Powder combined with a little grey powder (mercury and chalk). Of Gregory's Powder, a very valuable preparation, about as much as can be heaped on a threepenny piece is a fair dose for a child of six months, combined with half a grain of grey powder; double this amount may be given to a

child of one year. Such a dose may often be repeated with advantage every night for two or three nights in succession. Combined with this laxative treatment, the employment of tepid baths night and morning is often very beneficial. The water in the bath should have a temperature of about 90° F., and the child should remain in it four or five minutes. A bath at this temperature given just before bed-time is often of much value in inducing and maintaining quiet sleep.

Treatment of Colic and Diarrhœa.—When there is any tendency to these disorders, great care in diet must be taken, and the stomach and abdomen of the child must be clothed very warmly. The only laxative medicine permissible under such circumstances is castor oil, and this should only be given early in the attack. When the diarrhœa persists, it may be necessary sometimes to stop for a day or two the administration of farinaceous foods, and to feed the child exclusively on animal broths, such as chicken tea, veal tea, or beef tea, together with some milk diluted with barley or lime water. In older children during the second dentition diarrhœa is rarely troublesome, and is usually cured quickly by one or two teaspoonfuls of castor oil taken at the commencement of the illness, and followed by abstinence for a day or two from all foods likely to irritate. It is desirable to emphasize the importance of temporary abstinence from food in all cases of acute irritation of the digestive canal; children in ordinary health never suffer from even complete starvation for twenty-four hours, if any thirst is allayed by water or other innocuous fluid.

Cold and Cough.—The disturbance resulting from dentition frequently manifests itself in slight inflammation of the lining membrane of the nose, the windpipe, and the bronchial tubes, giving rise to cold in the head, and to attacks of cough varying in character according to the part of the windpipe and bronchial tubes affected. In most cases where actual false croup or bronchitis occurs during teething, it is probable that some temporary exposure to cold has combined with the irritation of teething to cause the illness; but the susceptibility to this form of disease is so strong in many children at this period of their lives, that the most careful attention to warmth is not invariably successful in preventing the attacks, although doubtless of much value in mitigating their severity.

The colds, as they are popularly termed, usually commence with difficulty in breathing through the nose, accompanied by some watery or mucous discharge, and a tendency of the eyes to water. There is generally also slight fever, and restlessness at night, often, at least in young children, due more to the difficulty in

breathing through the nose, than to the discomfort resulting from the fever. Within a day or two a hoarse croupy cough develops, associated with some hoarseness of the voice, and occasionally actual discomfort in speaking.

False Croup.—It is at this stage that the apparently alarming but not really very serious attacks of so-called false croup are apt to occur during the night. Children vary very much in their susceptibility to such attacks, some never suffering from them however frequently they may take cold, while others seldom pass through a cold without experiencing one or more attacks. The child has perhaps been fairly well all day, with only a slight cold in its head, and possibly a little hoarseness of the voice with slight cough. Within one or two hours after falling asleep it awakens apparently choking, with loud ringing cough, and great difficulty in drawing in its breath. It usually starts up in bed, grasps the side of the bed and anything else within reach, and struggles for breath for perhaps a few minutes, coughing in a characteristic manner very frequently, and drawing in its breath often with a sound like the “whoop” of whooping-cough. This condition seldom lasts in an acute form for more than a few minutes; but for some little time afterwards slight difficulty in inspiration is often present, and young children are usually much frightened and cry for some time after the attack. In the course of perhaps twenty minutes or half an hour all traces of the attack may have disappeared, and the child will again sleep peacefully as before.

Bronchial Catarrh.—A day or two later in the course of the cold the cough generally alters in character, becoming the cough of ordinary bronchitis, and the hoarseness disappears; slight wheezing sounds may be heard if the ear is applied to the chest of the child, and perhaps some little increased quickness of breathing, due to the bronchial tubes being partially obstructed by mucus. Children of five years old and upwards will usually cough up and expectorate some of this mucus, which is generally of a whitish gelatinous character, tending to become more yellow and less thick as the illness progresses; younger children, almost invariably swallow it after bringing it up into the throat, and, as a result of its entry into the stomach, some temporary indigestion is usually set up in addition to the bronchial irritation. If good care be taken of the child at this period, the cough usually becomes softer and less frequent, and recovery quickly ensues. What has been described here is the course of an ordinary cold affecting a child during dentition. In children prone to bronchitis, or subjected to severe exposure to cold, the inflammation attacking the windpipe

and that affecting the bronchial tubes may be very much more acute ; but these severe attacks of laryngitis and bronchitis, as they are severally termed, fall to be referred to rather under the heading of the Common Maladies of Children, than in a chapter devoted to the disorders connected with dentition.

Necessity of Care during Dentition.—From the description given above, it should be obvious that even slight colds, affecting the head only, should never be neglected in children at the period of teething. The earlier care is taken, the more probable it is that the cold will be cut short and prevented from running through its various stages ; and even if this is not effected, early care will go far to diminish and render unimportant the later developments.

Treatment of Cold.—If the weather be at all cold, the child should be confined to one room properly heated and ventilated, and care should be taken to maintain the temperature of the room throughout the night. There is no doubt that many of the attacks of false croup are brought on by lowering of the temperature of the room in which the child sleeps at night. Ordinarily a child breathes entirely through its nose, and the air is warmed and rendered moist before it reaches the windpipe by contact with the internal surface of the nose. When the nose is closed by cold, the child is compelled to breathe through the mouth, and the cold air enters directly, with very little previous heating, into the windpipe, the very sensitive surface of which is irritated and dried. Some spasm of the vocal cords at the entrance of the windpipe is excited by this irritation, and this spasm, along with the cough resulting from the same causes constitutes essentially the attack described above as false croup.

In addition to keeping the room warm at night, it is of importance to maintain the warmth of the hands and feet of the child. It should be clothed in a flannel night-dress, and a bottle filled with warm water and covered with flannel should be placed near its feet. A warm bath given just before placing the child in bed, the water being of the temperature of 100° F., is often of much value in promoting perspiration and thus relieving the fulness of the head ; and this is assisted also by the administration of some warm drink, such as gruel or an infusion of jam in hot water, before the child goes to sleep. When any hoarseness or cough appears, some stimulating liniment such as camphorated oil, or hartshorn and oil (liniment of ammonia), should be rubbed well into the chest and back night and morning ; or, especially if the child is feverish and restless, a weak mustard poultice, made of one-fifth or one-fourth part of mustard to four-fifths or three-fourths of linseed, should be applied to the chest for one or two

hours, and on its removal should be replaced by cotton wool. Mustard poultices well made are very soothing, even when they irritate the skin slightly, and often promote sleep. When a child falls asleep with one on its chest, care must be taken to remove it at the proper time, otherwise more irritation of the skin than was intended may result.

When the cough is frequent and troublesome, much relief is often given by the administration of a few drops of ipecacuanha wine in a teaspoonful of glycerine every two hours. Children are very tolerant of this drug, and will take it in almost as large doses as adults. To a child of one year old, five drops may safely be given every two hours, while a child of five will take ten drops without experiencing any nausea or other discomfort.

Treatment of False Croup.—For the spasmodic attacks which occasionally occur at night, the best treatment is immersion in a warm bath of 98° F., accompanied by an emetic in the form of one or two teaspoonfuls of ipecacuanha wine. The ipecacuanha should be given as soon as the child can be induced to swallow it; and if vomiting does not result in a few minutes, it should be induced by introducing the finger into the mouth and tickling the back of the throat. If enough warm water for a bath is not readily available, the application of a sponge wrung out of warm water to the outside of the throat, just under the chin, is often an efficacious remedy. The tendency to spasmodic attacks of this kind is much diminished by saturating the atmosphere of the room with steam from a steam-kettle. Attention to the regular action of the bowels is also important as a preventive, and it is usually desirable to administer a dose of castor oil in the morning after an attack has been experienced.

Treatment of Bronchitis.—When bronchitis occurs, treatment similar to that employed when the windpipe is affected should be continued. Five to ten drops of ipecacuanha wine in a teaspoonful of glycerine should be given every three hours, and the chest and back should be well rubbed twice daily with some stimulating liniment. If the cough is severe, or the breathing at all impeded, diluted mustard poultices should be applied occasionally to the chest; and in the intervals between their application cotton wool should be employed to cover the chest, the skin being rubbed gently with olive oil or vaseline if much reddened by the poultices. The temperature of the room in which the child is confined should not be allowed to fall below 64° F., and especial care should be taken to maintain this temperature throughout the night. The use of a steam-kettle is of much value in soothing a troublesome cough. For heating rooms in which children are confined suffering

from cold or bronchitis, open fires are much preferable to gas stoves, which by drying the atmosphere occasionally add to the irritation of the lining membrane of the nose and throat. The injurious effect of gas stoves can be modified by the evaporation of water in their vicinity, but under no circumstances are they comparable in value to open fires.

Child-Crowing.—The spasmodic attacks of false croup which have been already described have to be distinguished from another and somewhat similar affection from which children not unfrequently suffer during dentition, known as “child-crowing,” or scientifically as *Laryngismus stridulus*. This child-crowing usually takes the form of a sudden convulsive attack, appearing during apparent health, and arresting completely for a few moments the power of breathing. As the spasm passes off the breath is drawn in with a crowing or hissing sound, somewhat similar to what occurs in spasmodic croup. When a child is attacked with this form of spasm, it becomes suddenly stiff, throws its head backwards, and becomes first pale and then livid in the face, with staring eyes and very alarmed expression. Occasionally there is at the same time some slight convulsive movements of the hands or feet. Sometimes for some days or even weeks before such an attack preliminary symptoms are noticed in the form of occasional crowing or croaking in the breathing, the presence of which should always suggest recourse to medical advice. But such warnings are not by any means always present, and the attack may, and frequently does, come on without any preliminary indication of disease. Its distinction from spasmodic croup is easily made by the suddenness of the onset, the complete arrest of breathing, the tendency to convulsive movements, and the absence of cough. Attacks of child-crowing, if at all severe, are attended with considerable danger of sudden death; and although one or two attacks may have only been slight, it can never be assumed that further ones will not be of a more dangerous type. Children showing any tendency to them should always be placed immediately under medical care, as much can be done by proper treatment to prevent their recurrence.

Treatment of Child-Crowing.—For the immediate treatment of an attack when it occurs, the most convenient remedy is the application of a sponge wrung out of hot water to the throat, immediately under the chin. The inhalation of the vapour of ammonia is also useful in relaxing the spasm, and it is a good rule for mothers or nurses of children showing a tendency to child-crowing to always carry a bottle of ammonia salts in their pockets. If these remedies are not immediately effectual, the

child should be placed as quickly as possible in a bath of about 98° F.

These attacks are of a purely convulsive character, the spasm affecting certain muscles connected with respiration, and temporarily arresting their movement. Children during teething are subject also to convulsive attacks of a more general character, which are known usually as "fits" or general convulsions.

General Convulsions, like the attacks above described, usually come on very suddenly, without any warning. The child is observed to become suddenly stiff, with eyes staring, neck thrown back, arms and legs stretched out and immovable, hands clenched, and breathing temporarily arrested. The eyes are often turned upwards, so that very little but the whites are visible; sometimes they are turned to one or the other side, so as to appear to squint. After a few seconds convulsive movements of the face, arms, and legs commence. The face, which usually becomes somewhat livid, is twitched in different directions. The mouth is moved irregularly, and if the child has teeth the tongue may be bitten, and froth mixed with blood appear on the lips. The eyes usually roll from side to side, the eyelids being widely opened. The arms and legs twitch usually in a marked manner, the twitching sometimes affecting even the fingers and toes as well as the rest of the limbs. From the commencement of the attack the child is perfectly unconscious, and remains so during the whole course, and even frequently for some little time after it has ceased. When the spasmodic action ceases, the muscles relax, the child becomes pale, and may draw a long sigh, and gradually recovers consciousness. The duration of such a convulsive attack varies very much. A slight attack may not last more than one or two minutes, while a very severe attack may last as many hours. Generally speaking, when the attack is due to the irritation of dentition, it will not be of long duration.

Although the general convulsions just described seem in some respects much more severe than the limited attacks known as child-crowding, they are not so dangerous, or so often fatal in their results. General convulsions indeed, alarmi, as they appear, are very seldom indeed fatal to life, unless their duration is of exceptional length.

Treatment of General Convulsions.—The best immediate treatment is to place the child at once in a warm bath of about 98° F., keeping it in the bath for five or ten minutes if necessary. When taken out it should be rolled in a warm blanket without being dried, and, if the convulsions are not entirely arrested, a large enema of warm water should be administered with a Higginson's

syringe. Convulsions are very often associated with some disturbance of digestion, as well as with irritation from teething, and the evacuation of the bowel resulting from the enema is often followed by complete cessation of the convulsions. If the child has taken a meal shortly before the convulsive attack, an emetic of ipecacuanha should be given as soon as it is able to swallow, and, if this does not act quickly, vomiting should be excited by tickling the throat with the finger. In doing this, care must be taken that the finger is not bitten by the child.

General convulsions due to teething or other local irritation have no special tendency to recurrence after complete recovery, and unless when of exceptional duration do not in any way permanently injure the child. Frequent recurrence would indicate the probability of some other and more serious cause for the attacks.

Abscess of Ear.—One occasional cause of general convulsions which is sometimes overlooked, but which is not uncommon during the period of teething, is the presence of acute inflammation and abscess of the ear. This affection is often exceedingly painful, and gives rise to very persistent screaming in young children. The disease is not usually difficult of recognition in children old enough to describe their sensations; but in children under two years of age it is often rather difficult of detection, until the nature of the case is made clear by the discharge of matter from the ear. The most characteristic signs of its presence are persistent loud crying, tossing of the head from one side to the other, and a tendency to raise the hand to the side of the head, an action not common under other circumstances. The painful stage of the disease usually does not last more than a day, the pain disappearing when the matter is liberated from the ear. It is during the early part of the painful stage that convulsions are most likely to appear; but their occurrence is not frequent in connection with this disease.

Treatment of Abscess of Ear.—The pain of inflammation of the ear is best relieved by plugging the ear with a little cotton wool steeped in laudanum, and applying warm fomentations over the outside. The cotton wool should be rolled into a thin cylinder, small enough to go into the opening of the ear, into which when dipped in laudanum it should be pushed gently as far as possible. Flannel wrung out of hot water should then be placed over the ear and covered with oiled silk or gutta-percha tissue. If convulsions occur, they must be treated as directed above.

Night Terrors.—In children during the second dentition, a

peculiar kind of mental disturbance occasionally occurs, which is known under the name of *night terrors*. The child awakens up at night, suffering apparently from some dreadful delusion, starts up in its bed, and screams violently. Occasionally it may even rise and rush out of the room. If observed immediately on waking it will be found not properly conscious, remaining often for some little time in a self-absorbed and "dazed" condition of mind, evidently suffering from much alarm. The attacks are somewhat similar to those of nightmare, but differ from them in persisting for some time after awaking. Very exceptionally they occur during the day, when the child is awake and apparently well, some sudden illusion of sight alarming it, and throwing it temporarily into the same absorbed and trance-like frame of mind. These night terrors and analogous day disturbances are generally found associated with some disorder of digestion, and will usually disappear entirely if one or two doses of some mild purgative medicine are given, and due care is taken to prohibit indigestible articles of food.

Mental Peculiarities during Second Dentition.—The mental health of children during second dentition is very unstable; and it is not improbable that many acts of purposeless mischief, of motiveless naughtiness, of inexplicable deceit, in children of habitual good conduct and gentle disposition, committed at this period of life, are as truly involuntary reflex mental acts, as the muscular convulsions already described are involuntary physical acts, for neither of which can the child be properly considered responsible.

CHAPTER XIX.

COMMON MALADIES OF CHILDREN.

1. **EARACHE AND DISCHARGE FROM EAR.** 2. **AFFECTIONS OF THROAT—CATARRHAL INFLAMMATION OF THROAT—SUBACUTE TONSILLITIS—DIPHTHERITIC INFLAMMATION—DISTINCTION BETWEEN THEM—TREATMENT OF CATARRHAL INFLAMMATION—OF SUBACUTE TONSILLITIS—PRECAUTIONS RELATING TO DIPHTHERIA—CHRONIC ENLARGEMENT OF TONSILS—THEIR EFFECTS ON RESPIRATION—SNORING.** 3. **DISORDERS DUE TO COLD OR CHILL—COLD IN THE HEAD—IN THROAT AND LARYNX—BRONCHITIS—COLD AFFECTING THE STOMACH—AND THE BOWELS.** 4. **DISORDERS OF THE DIGESTIVE ORGANS—INDIGESTION—ACUTE—AND CHRONIC—DIARRHŒA—PROLAPSE OF BOWEL—CONSTIPATION—TREATMENT BY DIET—BY INJECTIONS—BY MEDICINES.** 5. **ERUPTIONS ON THE SKIN—HEAT-SPOTS—ROSEOLA—NETTLE-RASH—ECZEMA—**6. **INFECTIOUS ERUPTIVE FEVERS—CHICKEN-POX—SMALL-POX—SCARLET FEVER—MEASLES—RÜTHELN—MUMPS—WHOOPING-COUGH—RESPONSIBILITY OF PARENTS IN RELATION TO INFECTIOUS DISEASES.** 7. **PARASITIC DISEASES—RINGWORM—ITCH—THREADWORMS.** 8. **DIATHETIC DISEASES—RHEUMATISM—SCROFULA—RICKETS.**

1. Earache and Discharge from the Ear.—The occurrence of pain of a more or less acute character referred to the ear is not unfrequent in children, and is due usually to some inflammation affecting either the external passage of the ear, or the middle ear, which is situated just within the drum. As has been already mentioned, it is sometimes associated with the period of dentition, but other causes, such as slight cold, disorder of the digestion, or inflammation of the throat, may also give rise to it. When the inflammation affects the external passage of the ear, its presence is usually indicated by some degree of swelling and redness, with tenderness to touch; when the middle ear is affected, there are no external symptoms. The pain is often of a very severe character, and may continue for many hours, generally exhibiting paroxysms of acute exacerbations alternating with periods of partial relief. In a certain number of cases, complete relief is afforded in time by the discharge of matter which has formed as the result of the inflammation; in others, the pain subsides gradually without the occurrence of any discharge. As a rule, it is not difficult to locate the pain as arising from the ear, but sometimes in children who have suffered from toothache, the pain of inflammation of the ear may be mistaken for that arising from decayed teeth. The presence usually of some degree of deafness in the affected ear

will assist in the distinction ; sometimes the deafness may be very marked. Occasionally inflammation occurs in the ear without any pain whatever, and its existence is only recognised by the subsequent discharge, or by persistent deafness.

The **treatment** of this affection is directed first to the relief of pain, and afterwards to the maintenance of great cleanliness if any discharge results. Pain is best relieved by the application to the passage of the ear of a little cotton wool soaked in laudanum, over which may be placed, if necessary, some flannel wrung out of hot water and covered with oiled silk. The cotton wool should be rolled into a little pledget, small enough to enter the passage of the ear, and long enough to project about a quarter or half an inch on the outside, so that it may be easily withdrawn ; the flannel should be large enough to cover the whole of the external ear. When the pain is very severe, continuous fomentation with a sponge wrung out of hot water gives great relief. It is always desirable at the same time to administer some purgative medicine, the good effect of which in relieving pain arising from the ear is often marked. Any convenient laxative medicine, such as sweet essence of senna or compound liquorice powder, in suitable doses, may be employed. When discharge occurs, the ear should be kept thoroughly clean by frequent syringing with warm water, to which it is generally desirable to add a little antiseptic fluid such as "Sanitas" or "Condy's." Either of those added to water at a temperature of about 90° F., in the proportion of one teaspoonful to a wine-glassful, makes a very eligible lotion for this purpose. A small india-rubber ball syringe is better than a glass one, as it admits of more gentle syringing ; and great care should always be taken that the syringing is performed as gently as possible, so as to avoid any risk of injuring the already inflamed and tender tissues. If the discharge continues for more than two or three days, it is well to have resort to skilled medical advice. The persistence of discharge from the ear is always an indication of possible danger, not only to the hearing power of the ear, but also to the life of the child. The ear is in such close proximity to the brain, that inflammation of the one is somewhat apt to extend to the other ; and inflammation of the brain is always a serious and often a fatal disease. It is therefore most important never to neglect the existence of any discharge from the ear. An idea used to be prevalent that the arrest of discharge from the ear was attended with risk. The only foundation for such a belief is that it is undoubtedly dangerous to shut up the discharge in the ear by preventing it getting out ; but it is not in any way dangerous to prevent its formation by curing the disease from which it arises. The mischief which may

arise from shutting in the discharge is sufficient reason for condemning strongly the common practice of keeping a plug of cotton wool in ears affected with discharge. Such a plug is not only absolutely valueless, but may be a source of some danger.

Short reference has been made to a form of inflammation showing itself only by the presence of deafness. Deafness resulting from this is apt to be progressive in character, and is difficult to cure in proportion to the duration of its existence; those responsible for the health of children ought therefore to take the earliest opportunity of obtaining medical advice when its existence in any degree becomes apparent.

2. Affections of the Throat. Description and Method of Examination.—If a child opens its mouth widely, and the view within is not obstructed by the tongue, the roof of the mouth will be seen to terminate behind in an arch, from the middle of which a pendulous piece of tissue is suspended, which is known as the *uvula*. At each extremity of the arch a projecting oval-shaped body will be observed, which forms part of the side of the mouth behind the teeth, and extends back towards the throat; these are called the *tonsils*. The cavity seen behind these tonsils is known as the *pharynx*, which is continuous below with the gullet. The windpipe opens out of the pharynx near its lower end in front. Not unfrequently a clear view of the pharynx is impeded by the position of the tongue, which some children are unable to place voluntarily in such a position as to admit of the throat being well seen. The difficulty can usually be surmounted by causing the child to take a deep inspiration, while it pronounces at the same time the syllable "Ah," an action which depresses the tongue and dilates the throat, so that its condition can be thoroughly examined. When the child cannot or will not do this, some flat instrument, such as the handle of a spoon, should be laid on the tongue to maintain it in proper position. Sometimes the view of the pharynx is obstructed by enlargement of the tonsils, which may be of such a size as to meet in the middle line; in such a case, when it is desired to examine the condition of the throat behind them, they must be separated by the flat handle of a spoon being pressed against the inner surface of each tonsil. Throats should always be examined in the best attainable light; when daylight is available, the examiner should sit with his back to the light, while the child sits or stands facing it. The child's head should be thrown somewhat backward, so that the light falls into the throat over the head of the person making the examination.

The throat in children is a particularly vulnerable part of the

body. It is therefore well, in order to facilitate its examination during illness, for mothers and nurses to accustom children to open their mouths fully and exhibit their throats occasionally during health. When children have not been trained to do this, there is often an unpleasant struggle when inspection of the throat is necessitated by illness; while, when habituated to show their throats properly, not only inspection but any local treatment necessary can be effected with ease, and without discomfort to them.

The throat is apt to become inflamed from simple cold, from disturbance of the stomach, from inhaling impure air, and from drinking impure water, as well as from various other causes affecting the general health; and the character and seat of the inflammation not unfrequently give some clue to the special cause from which it takes its origin. It is proposed to describe here only three forms, which are sufficiently distinct usually to be easily recognised, while all are of moderately frequent occurrence.

(a) **Catarrhal Inflammation of Throat.**—The first and most common form is known as simple catarrhal inflammation of the throat, and is generally due to exposure to cold. If suffering from this, a child who is able to talk will complain of a sense of dryness in the throat, with discomfort in swallowing, sometimes amounting to pain, and occasionally of pain shooting up into the ears. A younger child will show a disinclination to swallow, at the same time that it may exhibit a strong wish for food. It will commence sucking its bottle with avidity, but leave off almost immediately, often with a fit of crying in which a little hoarseness may sometimes be noticed, although hoarseness is not a frequent characteristic of this affection of the throat. If the throat be examined in a good light, it will be noticed that the tonsils and the back of the pharynx are of a much darker red than usual, exhibiting a dusky hue, and being occasionally covered with rather adhesive mucus. The uvula also will sometimes be deepened in colour, and occasionally somewhat swollen. As a rule, there is no external tenderness or swelling, but sometimes a little complaint may be made if the outside of the throat is pressed upon.

(b) **Subacute Tonsillitis.**—The second form of inflammation of the throat affects mainly the tonsils, being known as subacute tonsillitis; this form is more frequently the result of irritation of the digestion, or of the inhalation of impure gas, or the drinking of contaminated water. The amount of pain experienced in swallowing is not so great as in the catarrhal form, but there is a constant sense of discomfort in the throat, and sometimes a desire to clear

it by coughing. Generally some swelling can be perceived externally, just under the angle of the jaw on each side ; if it cannot be appreciated by the sense of sight, its presence is often demonstrated by that of touch, a small area of increased hardness being felt to project beneath the skin in the position mentioned.

On inspection of the interior of the throat, both tonsils usually, sometimes only one, are seen to be enlarged, swollen, and reddened, and to project inwards towards the uvula. Very commonly their inner surfaces will be seen to be dotted here and there with white points, varying in size from a pin's head to a split pea ; occasionally these surfaces will be entirely covered with a whitish-yellow deposit of a soft-looking and somewhat putty-like appearance. This deposit, which is strictly limited in area to the surface of the tonsils, not extending backwards into the pharynx, or upwards on the roof of the mouth and uvula, occasionally comes off in flakes, leaving a healthy red surface underneath. These characters serve to distinguish it from the deposit present in the third form of inflammation of the throat, diphtheritic inflammation, or diphtheria.

(c) **Diphtheritic Inflammation** of the throat is apt to begin in a very insidious manner, often giving rise at first to only very little discomfort. The child usually seems somewhat ill and out of sorts, with the temperature slightly raised, for a day or two before any complaint is made of local discomfort in the throat. When attention is called to the throat early in the disease, all that may be noticeable may be some very dusky red patches of inflammation scattered here and there on the tonsils, uvula, the roof of the mouth, or the back of the pharynx ; or, if the case is to be a severe one, the whole of the throat may appear of deeply red and angry-looking character. When seen a day or so later the red patches, or the throat generally, will be observed to be covered with a thin whitish membrane, smooth on the surface and sometimes almost glistening, which is surrounded with a deepened red border separating it from the healthy lining of the throat. As the disease progresses, the membrane becomes changed in colour, altering from white into whitish yellow, then into deep yellow, and sometimes becoming grey, or even black. At the same time its surface loses its smooth and glistening appearance, and becomes somewhat roughened, opaque, and leathery.

Distinction between Tonsillitis and Diphtheria.—Diphtheria is always a disease of serious import, requiring immediate skilled medical treatment, and it is accordingly very important to distinguish it from the comparatively benign affection of the throat already described as Subacute Tonsillitis, for which under some conditions it is apt to be mistaken. The distinction rests mainly

on the character and appearance of the exudation in tonsillitis, and on its strict limitation to the surface of the tonsils. In diphtheria the exudation never occurs in the form of small disseminated points over the surface of the tonsils. When it appears on the tonsils at all, it takes the form of one or more patches of varied size. The colour of the patches of diphtheria on the tonsils is also different at first from the points of tonsillar exudation present in tonsillitis. Diphtheritic patches are at first white and glistening, while patches of tonsillar exudation are from the first of a dirty-yellowish colour. The real difficulty in distinguishing the two is encountered when the tonsillar exudation in subacute tonsillitis covers the whole surface of the tonsils. In such a case the throat presents a considerable resemblance to a diphtheritic throat, but the soft-looking, putty-like character of the exudation, its strict limitation to the surface of the tonsils, and the healthy appearance of the whole of the rest of the throat are generally sufficient to indicate the milder disease. A point of distinction occasionally available is the facility with which part of the tonsillar exudation can be sometimes scraped off with the handle of a spoon. Diphtheritic membrane can never be separated in this way, as it actually grows into the substance of the tissue on the surface of which it appears. The appearance of any patch of membrane on the roof of the mouth or on the back of the pharynx is conclusive evidence of diphtheria.

The Treatment of ordinary Catarrhal Inflammation of the Throat consists mainly in the maintenance of warmth, confinement to bed when any feverishness is present, and the application of soothing remedies to the throat. Externally, water compresses usually give the most relief, applied from ear to ear, and renewed once or twice daily. If relief is not afforded by compresses, linseed poultices should be employed, changed as frequently as may be necessary. Internally, the sucking of small pieces of ice occasionally, or the sipping of small quantities of iced water, is most grateful. It is usually well to give a mild dose of laxative medicine, and the food administered should be such as can be swallowed with little pain, and is capable of easy digestion. Milk, farinaceous foods, lightly-boiled eggs, and thickened soups or beef jellies fulfil well these conditions.

Treatment of Subacute Tonsillitis.—In subacute tonsillitis the external application of water compresses or poultices is equally effective. Internally, the application of some astringent remedy with a camel's-hair brush two or three times daily is advisable; glycerine of borax or glycerine of alum may be selected for this purpose. It is always desirable to act well on the bowels of the

patient with some suitable purgative, such as compound liquorice powder or "black draught" (*mistura sennæ co.*), in doses proportionate to the age of the child; and care should be exercised in the choice of easily digested food. When feverish symptoms exist, the child should be kept in bed.

It is out of place to say anything about the treatment of diphtheria; it is a malady of so serious a character that any sufferer from it should always be placed as quickly as possible under the care of a medical practitioner.

Precautions relating to Diphtheria.—Diphtheria is a disease of exceedingly infectious character, and on the first suspicion of its presence the patient should be most carefully isolated from the rest of the household. Its occurrence in any house ought always to excite suspicion of the probability of some defect in the drainage or the water supply, as it is especially prone to appear under such conditions; and even if not due to either of these causes, the course of the disease is usually determined to a considerable degree by the sanitary conditions under which the treatment is carried out.

There is some ground for believing that even ordinary catarrhal inflammation of the throat, and also subacute tonsillitis, are occasionally caught by infection, although generally due to other causes; and although it is not usually thought necessary to isolate children suffering from those affections, it is well to prevent such close contact as is involved in sleeping in the same bed with or in kissing other children.

(*d*) **Chronic Enlargement of Tonsils.**—This affection of the tonsils, which is sometimes known under the name of "hypertrophy of the tonsils," is not usually the result of inflammation, although tonsils permanently increased in size are perhaps more likely to become inflamed than normal ones. The tendency to enlarged tonsils is often congenital, and not unfrequently affects the whole of the members of a family. When the congenital tendency is present, the increase in size may appear at any age from one year up to thirteen or fourteen. Often the increase occurs by successive stages, the tonsils remaining for some time stationary in size, and as the result of some cold or other disturbance increasing rather rapidly, retaining their new and increased size for some time, and then again making another advance. The recognition of enlarged tonsils, on inspection of the throat, is very easy. Tonsils normally project scarcely at all beyond the line of the mouth and throat, being seen simply as very slight protuberances, more noticeable on account of their difference of appearance from the rest of the throat than from their prominence. When they are enlarged to

any extent, they project well into the throat, partly shutting off the view of the pharynx behind, and presenting the appearance of little tumours. Sometimes the hypertrophy is to such an extent that the tonsils actually touch each other in the centre of the throat, apparently blocking the passage altogether, and pushing the uvula forward out of their way. The hypertrophy sometimes affects only one of the tonsils, but more frequently both are enlarged, although not uncommonly to unequal extent. Whatever the degree of enlargement may be, the colour of the tonsils usually remains the same as in health.

Effects of Enlarged Tonsils on Respiration.—Enlarged tonsils are important chiefly in relation to the extent they may impede breathing through the nostrils. In themselves they are not a source of injury to health or of danger, as no amount of enlargement can ever induce dangerous symptoms; but by impeding the breathing through the nostrils, they not only are often the cause of considerable discomfort, especially during the night, but in time not unfrequently give rise to alterations in the shape of the chest, with resulting impairment of lung power. Even when the impediment to breathing may be slight, if it is in continuous action for months or years, the chest tends to give way under the increased work it has to do to draw in the proper amount of air; the sides of the ribs become drawn inwards, the breast-bone projects, and the condition results which when marked is known under the name of *pigeon-breast*.

Enlarged tonsils are frequently associated with the presence of small growths in the upper part of the throat behind the nose, which are known as *adenoid growths*.

Adenoid Growths are small swellings situated in clusters at the back of the nose and behind the soft palate, which are always accompanied by some amount of catarrh in that region. The growths themselves, and the consequent catarrh and excess of mucus, obstruct the passage from the nose to the windpipe, and give rise to difficulty and sometimes incapacity of breathing through the nose. The first symptom which usually calls attention to the impediment of breathing arising from adenoid growths is **persistent snoring** at night. Snoring only occurs when the mouth is kept open during sleep; and in children at least this condition is abnormal, and always indicates the presence of some disturbing cause, the most frequent being the presence of adenoids. In advanced cases, during the day also difficulty of nasal breathing may be observed, and the child will be noticed to keep its mouth open, and sometimes to make a disagreeable noise like very subdued snoring.

When persistent snoring at night is remarked, it is always well

to examine the condition of the throat and of the capacity for breathing through the nose. Enlarged tonsils are easily recognised at once when the throat is examined; adenoid growths are not visible, being situated above and behind the soft palate and uvula. Their presence may be suspected when there is considerable difficulty in breathing through the nose with the mouth shut, and when, on inspection of the throat, much mucus is noticeable behind the tonsils. When these symptoms indicate the probability of the existence of adenoid growths it is very desirable to take competent medical advice as to the propriety of having them removed. Not unfrequently they give rise to deafness, which is apt to be insidious in its onset and progressive in its course; any appearance of this calls for immediate removal of the growths.

When the tonsils are enlarged to such an extent as to cause inconvenience in breathing through the nose, or are keeping up a condition of persistent catarrh of the throat, it is well to try for two or three weeks the effect of the application twice daily of some astringent application, such as glycerine of alum or of borax, by means of a long camel's-hair brush. If no material improvement results within this period, the tonsils should be excised. The excision is comparatively painless, and is almost invariably satisfactory in its results.

The treatment of enlarged tonsils which are not of size sufficient to cause any difficulty in nasal breathing is mainly directed to the prevention of further enlargement, and depending as it does on various constitutional considerations, as well as local conditions, does not fall within the scope of this work. Judicious medical advice is always required in those cases.

Snoring may result from other causes impeding breathing through the nostrils, as well as from adenoid growths and enlarged tonsils. Catarrh of the throat with increased secretion of mucus may arise in other ways, and be present to such an extent as of itself to encroach to an injurious extent on the air channel. Various diseases affecting the nostrils also give rise to it. The important point to be kept in view is that persistent snoring in children from any cause whatever indicates the presence of some impediment to breathing, and that the continuous presence of that impediment is certain sooner or later to do injury to the chest, and therefore to the lung power of the child. Such injury is exceedingly difficult to rectify in later years; it is therefore most desirable that the impediment should be medically treated, and if possible removed, at the earliest possible date after its recognition.

3. Disorders due to Cold or Chill.—In a climate like

that of Britain, where sudden changes of temperature are very common, various affections resulting from chill or from "taking cold" are naturally frequent. Different children manifest the results of a chill in different ways, and it will not unfrequently be observed that children belonging to one family show a family resemblance in their manner of exhibiting the effects of "taking cold." Some children, when chilled, invariably suffer from nasal catarrh, or cold in the head; others as invariably are attacked with catarrh of the throat or windpipe, while others again manifest symptoms of bronchitis, or of irritation of the stomach or bowels.

Symptoms of Chill.—Whatever form the cold is about to assume, it usually commences with a feeling of chilliness, some languor and disinclination for play, often some want of appetite, and frequently a desire for sleep. These symptoms are usually accompanied or immediately followed by some slight rise of temperature. In this respect children vary very much. Some, with apparently very slight cause, will show a rise of temperature of four or five degrees, their temperature rising to 102° F. or 103° F., while others seemingly much more ill will exhibit a rise of only one or two degrees, or even may have a temperature absolutely normal. The height of the temperature of a child is thus a very unreliable guide as affording a measure of the severity of an illness, unless the special temperament of the child is known beforehand. A much more important fact in children is the duration of an increased temperature. Even in slight illness a high temperature may be observed temporarily, but a high temperature continuing for more than twenty-four hours ought always to excite strong suspicion that something more than a cold exists.

(a) **Cold in the Head.**—When the cold affects the head only, a feeling of fulness and stuffiness in the nose is experienced, with perhaps slight frontal headache in older children; and breathing through the nostrils is much impeded, if not rendered quite impossible. This is accompanied by a discharge of watery mucus from the nostrils, which is often of an irritating character, causing redness and soreness of the upper lip. In a day or two the discharge becomes thicker and more yellow in colour, at the same time losing its irritating character; the stuffiness and difficulty of nasal breathing then diminish, and recovery usually results in a few days.

(b) **Cold affecting Throat and Larynx.**—The effect of cold when it affects the throat and causes catarrhal inflammation has already been described under "Affections of the Throat" at the beginning of this chapter. When its effect is manifested mainly in the upper part of the windpipe, or "larynx," as it is termed, the first

symptom is usually a slight degree of hoarseness of the voice, often accompanied by a short, sharp cough, of what is known as a "croupy" character. The hoarseness may increase to such an extent that the child is only able to speak in a rough whisper, while the cough alters in character, becoming hoarse, barking, and occasionally accompanied with some discomfort or even pain referred to the throat. There is very seldom any expectoration of any kind in this form of cold. Sometimes, in severe cases, there may be a little difficulty of breathing at night, showing itself in rather long-drawn acts of inspiration. There is never in this affection any difficulty in expiration. It is when suffering from this form of cold that children are sometimes affected by attacks of spasmodic croup such as have already been described as occurring during dentition in Chapter XVIII. The child, having fallen asleep comfortably, is awakened suddenly with a sensation of choking, starts up staring wildly and gasping for breath, and coughs almost continuously for some little time, with a short, noisy, hoarse cough, drawing its breath with difficulty in the intervals of the cough, and making a whistling, stridulous noise in doing so. When the attack is severe, the child is usually much frightened; and, if of long duration, the face often becomes swollen and livid. Generally, after a period varying from two or three minutes to half an hour, the spasmodic attack subsides entirely, and the child again falls quietly to sleep. Some children are specially prone to such attacks, suffering from them to some extent with every access of cold affecting their larynx.

This form of cold affecting the upper part of the windpipe is very apt to develop into bronchitis. When it does not do so, recovery is characterised by a gradual cessation of the croupy cough, and by the restoration of the healthy tone of the voice. When bronchitis results, it has the same character as when it occurs as the first manifestation of cold, with the addition that the hoarseness of the voice usually continues to some extent until recovery from the bronchitis, and that the bronchitic cough is somewhat modified in character by the coexistence of the hoarseness.

(c) **Bronchitis** when resulting from cold is usually indicated first by the presence of cough, dry, short, and resonant in character. The cough may be accompanied by some slight audible wheezing in the chest, which is best heard by placing the ear flatly against either the breast or back of the child. Sometimes there is a little increased frequency of breathing, but not to a notable extent unless the bronchitis is severe. Occasionally, indeed, if the wheezing is very marked, the breathing may be somewhat slower than

usual, some difficulty being experienced during inspiration. The distinction between the difficulty of inspiration in bronchitis from that sometimes occurring in cold affecting the larynx is easily made, as when the larynx is affected there is a distinct whistling, hissing noise while the breath is drawn in which does not occur in bronchitis. If any noise exists during inspiration in bronchitis, it is of a wheezing character, easily recognised as coming from the chest.

When bronchitis has existed for one or two days, the cough usually changes a little in character, becoming softer and looser; and at the same time the wheezing usually diminishes or disappears, being succeeded by moist gurgling sounds, as of air passing through fluid. When this stage is reached, older children generally begin to expectorate a little mucus with the cough. This is at first usually white, gelatinous, and adhesive in character, gradually becoming more fluid, and more yellow in colour, as recovery progresses. It is very seldom that children under five years of age can be taught to expectorate. By the cough the mucus is thrown up into the throat, and while older children by a voluntary effort bring it into the mouth and expectorate it, younger children involuntarily swallow it, and as a result often suffer from pain in the stomach and disorder of the bowels. Sometimes the cough may be severe enough to cause some vomiting and retching, which brings up both some of the mucus contained in the bronchial tubes and any that has been swallowed, and has remained in the stomach. When the treatment of bronchitis is described, it will be seen that this natural method of evacuating the mucus is sometimes imitated by the administration of emetics. As recovery progresses the cough becomes less frequent, less rattling or bubbling is heard in the chest, and the expectoration, if any has been present, gradually diminishes.

(d) **Cold affecting the Stomach** usually manifests itself in pain of an aching character localised in the pit of the stomach, with slight tenderness on pressure, sensations of sickness sometimes amounting to actual vomiting, and distaste for food. Very seldom is headache complained of, the gastric disturbance due to cold in this respect differing from that which is the result of the ingestion of unsuitable food, when some degree of headache is generally present. If the tongue of the child be examined, it will usually be found somewhat furred, or else a little dry and of a brighter red colour than usual. The disturbance of the stomach due to cold is apt to continue for some little time, showing occasional periods of improvement in which all sense of pain is lost, and again becoming more severe with a return of the pain. Its

duration is often materially increased by the administration of indigestible and improper food.

(e) **When the Bowels are affected by Cold** the most frequent symptom is diarrhœa, with loose and watery motions. There may be a little pain and tenderness over the lower part of the abdomen, but this is often entirely absent; when present it is not usually at all severe, and of only temporary duration. Not unfrequently the affection of the stomach and that of the bowels occur simultaneously.

Of the affections here described as commonly resulting from cold, only one—bronchitis—is at all likely to assume a serious or dangerous character. Undoubtedly the paroxysmal attacks occasionally associated with inflammation of the upper part of the windpipe, the larynx, present often an alarming aspect, but they very seldom indeed are of such severity or duration as seriously to threaten the life of the child, and as a rule they are very amenable to suitable treatment. Bronchitis, on the other hand, especially in young children, and those of not very robust constitution, is very apt to assume a severe character, which often gives rise to much anxiety, and not unfrequently endangers life. The symptom which most readily indicates seriousness and approaching danger is the rapidity and difficulty of breathing. Laboured breathing in bronchitis is always a disagreeable symptom, and when this is combined with great quickness, and with perhaps some flushing of the face, or with much tendency to perspiration, anxiety should always be roused. In very young children the progress of bronchitis is sometimes exceptionally rapid, and it is always well to have recourse to medical assistance before serious symptoms become manifest, and indeed when any symptoms of illness are present beyond slight cough and occasional wheezing. The continuance of feverishness after the first day of illness is always a feature calling for attention, as it may be the only apparent indication of some complication, such as the presence of limited areas of inflammation of the lung.

The Treatment of Cold must be divided into that appropriate to the general earlier features, and that applicable to the individual manifestations. When a child, by chilliness, fretfulness, and slight fever after a little exposure, shows indications of having taken cold, it should be placed in a warm bath of about 98° F., allowed to remain in it from five to ten minutes, then taken out and dried carefully in a warm room, and before a fire if the weather is at all cold, and placed in a bed previously warmed. When in bed and properly covered, some warm drink should be given, such as gruel or infusion of jam, or even a little warm wine and water. On the

following morning the temperature of the child should be taken with the clinical thermometer before it is allowed to rise; and if the thermometer registers a temperature above 99° F., it should be kept in bed for the day. The diet should be made as light as possible, consisting mainly of milk, bread and milk, farinaceous puddings, and animal broths; and the child should be induced to drink a good deal of fluid in the form of milk, barley water, rice water, or lemon and water without much sugar. If the bowels have been in the least degree confined, their action should be promoted by the administration of some sweet essence of senna or some compound liquorice powder. When the cold affects only the head, very little beyond this general treatment is required. The comfort of the nose is promoted by occasionally applying to it a sponge squeezed out of hot water; after which it should be dried with a handkerchief, and anointed with vaseline. The application of vaseline to the interior of the nose with a camel's-hair brush is also soothing, and comfort is sometimes derived from inhaling through the nostrils the steam arising from very hot water. The skin of the upper lip should be protected from irritation arising from the discharge from the nose by the application nightly of zinc ointment or of cold cream.

The local treatment of catarrhal inflammation of the throat has been already described under Affections of the Throat.

Treatment of Cold affecting the Larynx.—When the larynx is the seat of inflammation, the frequent inhalation of the vapour arising from hot water is of much value. No special apparatus is required for this, as an ordinary hot-water jug answers perfectly. The jug should be half filled with water almost boiling, and the head held a few inches above the mouth of the jug while the steam is inhaled. If a large handkerchief or a towel is thrown over the head and gathered round the edge of the jug, the steam is prevented from dissipating, and the inhalation is more effective. When any special inhaler is employed, the water must not be quite so warm as when the vapour is inhaled from an open jug; with most inhalers, a mixture of two parts of boiling water to one part of cold water will be found of a suitable temperature. In these cases the external application of warm linseed poultices or weak mustard poultices is very grateful and soothing. The poultice should be tied on round the neck so as to cover the whole of the front part, and should be changed as often as it becomes cool. If the cough is troublesome, five to ten drops of ipecacuanha wine may be given in a teaspoonful of glycerine every four hours. Spasmodic attacks of so-called false croup, which occur chiefly during the night, are best treated by the application to the throat

of a large sponge squeezed out of hot water, followed if necessary by a warm bath of 98° F. as soon as it can be prepared. The inhalation of steam is also most useful. When these means fail in arresting the attack, which very seldom happens, the administration of an emetic in the form of one or two teaspoonfuls of ipecacuanha wine is almost invariably successful.

Treatment of Bronchitis.—Bronchitis is most successfully treated, when slight, by the application once or twice a day of a stimulating liniment to the chest and back. Eligible liniments for very young children are camphorated oil (liniment of camphor), and hartshorn and oil (liniment of ammonia), for older ones liniment of turpentine, and of mustard.

To ensure the efficacy of such liniments they should be rubbed well into the skin of the chest and back with much friction of the hand, five or ten minutes or even longer being given to the process. The chest should then be covered with a sheet of cotton wool, or protective tissue such as "Gamgee" tissue, which consists of a layer of cotton wool enclosed within two layers of thin gauze; this may be maintained in position by one or two turns of a thin flannel bandage. When the cough is very frequent and troublesome, the constant application of linseed poultices may be found more effective in allaying the irritation. These should be applied as warm as can be borne both to the back and to the front of the chest, and should be changed as often as may be necessary to maintain their heat continuously. If the skin to which they are applied becomes tender or irritable, a little olive oil should be poured over the surface of the poultice before its application; or if necessary the poultices may be intermitted for some hours, while the irritation is soothed by inunction of vaseline or olive oil, and the chest protected by cotton wool or Gamgee tissue. The most useful internal remedy is ipecacuanha wine, given in doses of from five to ten drops in a teaspoonful of glycerine every three or four hours. Very young children often experience much difficulty in coughing up the mucus which collects in the bronchial tubes, and evidence of its accumulation there is afforded by sounds of rattling and bubbling within the chest. In such cases the breathing is facilitated and the cure expedited by the administration of an emetic, in the form of one or two teaspoonfuls of ipecacuanha wine, given once or twice in twenty-four hours if necessary. The vomiting thus induced causes the evacuation from the bronchial tubes of most of the mucus accumulated there, and also gets rid of any which may have been coughed up and swallowed. It has already been remarked how little discomfort is caused to young children by vomiting, and they will often be

observed looking quite bright and happy within a few minutes after the emetic has acted.

In all cases of bronchitis it is **most important** to maintain a proper temperature in the room throughout the night. Many cases of bronchitis are indefinitely prolonged by neglect of this precaution. A temperature of at least 60° F. should be kept up in all cases; sometimes even a higher one of from 64° F. to 66° may be of much value.

When Cold affects the Stomach great care should be given to the diet of the child, which should consist exclusively of milk, light milk puddings, and veal tea or chicken tea. If much sickness is present it may be necessary to abandon the milk for a day or two, and to give simply veal tea, chicken tea, and barley water. Great relief is usually afforded by a succession of mild mustard poultices to the pit of the stomach, the poultices being made of such a strength as to maintain some degree of redness of the skin. Usually a strength of one part of mustard to five or six parts of linseed will suffice to effect this. When thirst is a troublesome symptom, very small quantities of cold water or barley water may be given as often as desired, not more than from one to two teaspoonfuls of cold water, or twice that quantity of barley water, being allowed at one draught. As the pain subsides greater liberality in diet may be allowed, the child returning gradually to its ordinary diet; but for some little time care must be taken to prevent the ingestion of anything at all likely to prove difficult of digestion.

If Diarrhoea is present fomentations with flannels wrung out of hot water are usually more agreeable than poultices, as they are lighter when spread over a large surface. Special care in feeding is essential, and often complete abstinence from all food except chicken or veal tea, and barley water, for twenty-four hours, will result in complete cure. When a cold has affected either the stomach or bowels, care should be taken for some little time afterwards to clothe the child warmly; it is often advisable in cold weather to specially protect the abdomen with a warm flannel binder.

4. Disorders of the Digestive Organs.—(a) Acute Indigestion.—Indigestion in children occurs both as an acute and as a chronic affection. In its acute form it is most frequently characterised by sensations of sickness, vomiting, headache, and occasional pain in the pit of the stomach, without any marked rise of temperature. When these symptoms present themselves, the absence of fever, as indicated by a normal temperature, is of much importance, as many acute diseases begin with sickness and headache, but almost always exhibit as well an increase of temperature. When the attack is very sudden, and has been

caused by the ingestion of some improper article of food, the offending material may often be detected in the vomited matter.

Acute indigestion is probably always the result of eating improper food, but sometimes the symptoms do not set in immediately after the food has been taken, so that it is occasionally difficult to trace the cause. If the stomach has been slightly irritated for some time by food not easily digested, a very slight cause may be sufficient to initiate a severe attack of acute indigestion. In very young children the attack not unfrequently commences with convulsive fits; and it is always well when such fits occur in children to inquire carefully what articles of food they have recently had, as a clue to the cause of the fits and their treatment is often thus afforded.

When the stomach has been thoroughly emptied by vomiting, there results usually very considerable relief, although a slight sensation of nausea with some amount of headache will usually remain, disappearing entirely after a night's rest.

In a less acute form indigestion presents itself in the form of aching pain in the pit of the stomach, with slight feelings of nausea, some disinclination for food, perhaps a little headache, and a tendency to lassitude and irritability of temper. Many children are very prone to attacks of this kind, which are caused usually by some unwonted article of food, or some excess in quantity; and although if properly attended to they are of short duration, and of comparatively little importance, if neglected they are apt to lead to a chronic irritable condition of the stomach, which may materially impair the general health.

(b) **Chronic Indigestion** is of rare occurrence in children, except as a result of achronically irritated condition of the lining membrane of the stomach, known to medical men as chronic gastric catarrh. When indications are noticed in a child of gastric disturbance continuing for some time, in the form of want of appetite, occasional pain in the pit of the stomach, slight headaches affecting chiefly the forehead, tendency to flushing of the face after meals, sudden attacks of pallor, restlessness at night, and talking in the sleep, there is a strong probability of the existence of chronic gastric catarrh, and medical advice should be sought. The cure is almost always rather tedious, and necessitates much attention both to diet and to climatic conditions.

Treatment of Indigestion.—Acute indigestion usually requires very little treatment. If the stomach is not thoroughly evacuated by vomiting, an emetic of one or two teaspoonfuls of ipecacuanha wine should be given; or sickness may be produced by irritating the back of the throat with the finger. After the sickness has

subsided, some laxative medicine should be given, to remove from the bowel any of the irritating material which may have lodged there; in most cases the preferable purgative is castor oil, given in a dose of one or two teaspoonfuls, according to the age of the child. Complete rest should be given to the stomach for a few hours afterwards, only a little water or barley water being given if thirst is present; and when food is again allowed, it should be of the lightest and most digestible character.

When the acute indigestion has given rise to convulsive fits, the child should be placed at once in a warm bath, and whenever an arrest of the convulsions takes place, efforts should be made to induce sickness by the administration of ipecacuanha wine, or by tickling the throat with the finger; after which a large enema of warm water should be given, and the child then allowed to remain for some hours lying in warm blankets, and without any food.

The treatment of chronic indigestion should always be carried out under competent medical advice.

(c) **Diarrhœa** in children, when not the result of chill, is usually due to irritation of the bowel from some improper food. When it is slight, it may be regarded merely as a somewhat exaggerated effort of the bowel to get rid of obnoxious contents, and should not be interfered with. It is apt, however, to go rather beyond what is necessary for the mere discharge of the offending material, and to continue for some time after it has been expelled. The attention to be given to diarrhœa depends mainly on the frequency of the motions, on the presence or absence of pain, and on the duration of the malady. If in one day the number of motions in an infant exceeded eight or ten, or in a child of four or five years old exceeded six or eight, it would generally be desirable to resort to some remediable measures; and the presence of pain of a colicky character would more urgently call for them. The continuance of such frequency of action for forty-eight hours would undoubtedly call for some attention; and any degree of frequency beyond what is stated above continuing for two days in an infant under one year old would arouse some amount of anxiety; while at an age beyond that it would be followed by some temporary depression of health.

The Treatment for Diarrhœa due to the ingestion of improper food consists of evacuation of the offending matter as rapidly as possible by the administration of one dose of castor oil in quantity suitable to the age of the child, abstinence for a day from all food except animal broths and barley water, and, in the case of young children, rest and warmth in bed.

(d) **Prolapse of the Bowel** not unfrequently occurs in children as a result of diarrhoea of some duration ; sometimes, on the other hand, it happens as a consequence of persistent constipation. In both cases it is directly due to straining on the part of the child in order to evacuate the bowels. When diarrhoea has continued for a little time, the lower end of the bowel becomes irritable and swollen, and even when the bowel has been completely emptied, a sensation is experienced by the child of incomplete evacuation ; it accordingly strains with the object of effecting this thoroughly, and as a result the somewhat swollen bowel projects a little way through the opening, and remains extruded for some time. The everted bowel forms a purplish-red swelling, varying from the size of a thimble to that of a Tangerine orange, at the opening of the bowel, and is readily distinguished from any other swelling by its very sudden appearance, and by the presence of an opening in its centre. The straining which constipation occasionally induces, in the attempt to evacuate the bowel, acts in a very similar manner in causing prolapse. In all cases, probably, the lining of the bowel near the opening becomes first a little inflamed and swollen, and, losing its elasticity, lends itself more easily to the extrusion. When prolapse has occurred once or twice under circumstances of irritation, it is very apt to happen afterwards when the bowels move in a normal manner, and may even take place when the child is standing or walking, without any action of the bowels. It gives rise to some degree of discomfort, which may speedily increase to pain unless the prolapse is returned into the bowel. When the prolapse is slight, it may return after a few minutes without any assistance, but as a rule it is necessary to aid by some gentle pressure upwards. The most simple and easy method of returning the prolapsed bowel is to cover the little finger with one fold of a thin towel or handkerchief anointed with some vaseline, and to push the point of the finger, covered by the towel, into the opening apparent in the middle of the prolapsed bowel. If the finger be pushed well upwards the bowel will be found to recede within the opening ; and when it has regained its proper position the finger should be drawn carefully from inside the covering towel, which is drawn out of the opening gently, after removal of the finger. If prolapse occurs frequently, much care must be taken in the diet of the child to prevent either diarrhoea or constipation, and the child must be watched during evacuation of its bowels in order that no unnecessary straining may be permitted. When children are in good health otherwise, a cold bath every morning is of value in strengthening the lower end of the bowel, and obviating the tendency to prolapse.

(e) **Constipation of the Bowels** consists not only in insufficient frequency of their action, but also in an abnormally hardened condition of the motions on evacuation. The normal frequency of action varies very considerably in different children, as it does at various ages. In babies under six months old the bowels usually act three or four times daily; between six months and a year from two to three times; and between one and two years old about twice daily. After two years of age one motion daily is the most usual, but some children have regularly evacuations twice every day, and even three may occur during the day without any apparent deviation from health, although this number is very uncommon. On the other hand, some children have only one motion every second day, although in perfect health. Constipation may be considered to be present when the motions are abnormally hard in character, and occur not more frequently than once daily. It is exceptional, however, for a daily motion to occur regularly when the motions are unusually hard; generally it will be found that one motion occurs only every second or third day. One reason for this is that the passage of a hard motion often involves some discomfort or even pain to the child, and it accordingly postpones as long as possible the effort to evacuate; another reason is that when hardness of the motions has existed for some little time, the extremity of the bowel loses its sensitiveness to indications calling for relief, and the healthy evacuation is inadvertently postponed. These two reasons afford a key to part of the treatment necessary for constipation.

Diet in Constipation.—The existence of constipation in an otherwise healthy child is generally an indication of the necessity of some alteration in its diet. The digestive power of children for different articles of diet varies greatly, and a diet which tends to excite diarrhoea in some may be insufficient to prevent constipation in others. It is not, therefore, possible to indicate any definite diet which will ensure freedom from constipation, but some suggestions may be offered as to the direction in which alterations of food should be made.

Not unfrequently a diet which consists too exclusively of milk, and foods made with milk, is associated with constipation. In such cases the addition of some animal broths, and of eggs lightly boiled or poached, may be of much value.

When only light and prepared farinaceous foods such as Ridge's or Mellin's have been employed, the substitution of oatmeal or of Robinson's groats may facilitate the regular action of the bowels. In young children any change of food should be made with caution, and the effect watched. When children have reached the

age of one year, a little stewed fruit, such as prunes or apples, may be added to the diet, or a small quantity of well-cooked green vegetables, such as cauliflower or spinach, may be permitted. The addition of a little fat to the diet in the form of cream, butter, or a little fried fat bacon, is often very useful in combating the constipation of the bowels. Cod-liver oil in small doses is often used for this purpose with much advantage. Sometimes undue dryness of diet is the source of the irregularity of the bowels. The child perhaps takes some farinaceous food for breakfast, a little fish or pudding for dinner, and again something farinaceous in the evening, and during the whole day drinks no fluid beyond what is contained in the food supplied. In such cases the addition of fluid to the diet in the form of milk, milk and water, or plain water, may result in much improvement. In older children the diet must be varied as much as possible consistently with the digestive capabilities of the child, articles of diet of a laxative tendency being selected, such as oatmeal, green vegetables, fruits, both cooked and uncooked, and fats, and given along with, or in place of, the more simple articles of food appropriate to children's diet. Much assistance in the treatment is usually effected by the daily administration of a cold bath, followed by friction of the skin with a warm towel.

Importance of Habit.—Of very great importance in the treatment of constipation is the inculcation of a *habit of soliciting an action of the bowels daily at a fixed hour*, and devoting at least five minutes to this operation. Reference has already been made to the utility of this practice in inducing regular action of the bowels, and its importance is emphasized by the consideration, mentioned as one of the causes of constipation, that the hardness of the motion tends to cause some insensibility to the call for relief. Mention has also been made there of the tendency of children to postpone the evacuation when constipation exists, on account of the discomfort arising from the hardness of the motions; an additional reason for regularity being thus afforded, as the hardness and consequent discomfort are only increased by the delay, while at the same time the sensibility of the bowel is diminished. The sensibility is also diminished if the evacuation is only incomplete, and accordingly care should be taken that a due time is given to complete the action and empty the bowel.

Enemas.—When alteration of diet, together with regular solicitation of action, is insufficient to relieve altogether the constipation, some assistance must be afforded either by applying locally a stimulus to the bowel, or by the administration of some laxative medicine. The most convenient stimulus to the bowel

for this purpose is afforded by the injection of one or two teaspoonfuls of glycerine with the aid of a small vulcanite syringe, such as is described in Chapter IV. Usually within five or ten minutes after such an injection the bowels act freely and effectively, and the injection, if successful in its action, may be repeated daily, or better, on alternate days, without any risk of weakening or injuring the bowel. When the stimulus of the glycerine is not sufficient to produce adequate action, an injection of three or four ounces of cold water should be employed. This also, like the injection of glycerine, may be repeated when necessary without fear of injury. It is generally advantageous to repeat such injections only on alternate days, affording the bowel an opportunity every second day of acting properly without artificial stimulus.

Laxative Medicine.—When it is found that even with daily action of the bowel induced by artificial stimulus, and with the aid afforded by appropriate alteration of diet, the motions still continue to be of abnormal hardness, some internal medicine must be resorted to, in order to modify and increase the secretion from the lining membrane of the bowel. To this end recourse may be had to the occasional administration of sweet essence of senna, compound liquorice powder, or sulphur in the form of lozenges, in doses suitable to the age of the child. It should always be borne in mind, however, that the employment of drugs for this purpose should be resorted to as seldom as possible, as the bowel becomes quickly habituated to them, and the digestive power is apt to be weakened by their frequent use.

5. Non-Infectious Eruptions on the Skin.—Eruptions of different kinds occur frequently in children, the skin during the earlier years of life being very sensitive, and sympathizing in this way with various disturbances of the general health. Some of these are associated with, and apparently dependent upon, some disorder of the digestive organs, and are not infectious in character; others form the external manifestations of what are known as essential fevers, and indicate diseases of an infectious nature; while a third class again are due to irritation of the skin from external sources. Some of the more simple non-infectious eruptions will be first described.

(a) **Heat-spots** (*Erythema papulatum*).—These spots, although not unfrequently due to the irritation associated with dentition, more frequently result from some disorder of digestion, such as may be produced by an excess of animal food in the diet, or an inordinate quantity of sugar. Rarely they are caused by flea-bites. They take the form of disseminated red elevated spots, in size varying from a split pea to a threepenny piece, slightly

hard to touch, irritable and itching, and each surrounded by a small circle of reddened skin. Usually they occur in clusters, but sometimes singly; and their favourite sites are the legs, arms, thighs, back, and shoulders. Their appearance in the face is exceptional. The spots usually appear suddenly without any warning or indication of illness, remain red and irritable for one or two days, and then fade and disappear gradually, while other fresh ones come out on other parts of the body. Successive crops may continue in this way for several weeks, or, in fact, so long as the disturbing disorder of digestion persists. When the eruption is severe, some of the spots occasionally have a small vesicle of fluid on their apex, which dries up as the spots subside. The recognition of heat-spots is not usually difficult, as their appearance is almost characteristic. The one disease for which sometimes they are mistaken is chicken-pox, and then only when the small vesicles on the apex of the spots are exceptionally apparent. The points of distinction are that in heat-spots the elevated red spots are large and somewhat hard and any vesicles present very small, while in chicken-pox some of the vesicles are usually rather large, the surrounding redness very small, or even absent altogether, and the hardness entirely absent; that heat-spots generally occur in clusters, and are often limited to one arm or one leg or other situation on the body, while the vesicles of chicken-pox are always disseminated over the whole body, including as a rule a few on the face; and that the vesicles of heat-spots when present tend to shrivel and disappear within twenty-four hours, while those of chicken-pox usually increase in size for one or two days. It is only indeed within the first twenty-four hours of their appearance that any mistake can be made, and the more common error is in mistaking chicken-pox at its commencement for heat-spots than the converse. Further points of distinction in this early stage will be given when chicken-pox is described.

The Treatment of Heat-Spots should be directed to the removal of the disturbance to which their appearance is due. If the irritation of teething appears to be the cause, attention should be paid to the condition of the mouth, and mild laxative medicines such as sweet essence of senna, fluid magnesia, or grey powder should be given, as suggested in the chapter on Disorders connected with Dentition. When the digestion appears in fault, which may be assumed to be the case in the absence of any disturbance due to teething, any apparent error in diet must be corrected, the frequent association of the heat-spots with a rich meat diet, with "heating" (highly nitrogenous) articles of food such as oatmeal, and with excess of sugar, being specially kept in view. In

addition to alteration, and occasionally reduction in quantity, of diet, it is generally well to act on the bowels slightly by giving a mild aperient every second night, Gregory's powder or fluid magnesia in appropriate doses being eligible in such circumstances. The most soothing local applications for the irritation of the spots, which is apt to be especially troublesome at night, are vaseline, cold cream, and Goulard water mixed with milk in equal portions.

(b) **Roseola** or **Rose-rash** is an affection of the skin of very slight importance, and usually of very temporary duration, due to some slight disturbance of the digestive system. It occurs in the form of a rose-coloured rash, covering sometimes the whole, sometimes only a part, of the body, which on careful examination is seen to be made up of innumerable small crimson spots, separated from each other by narrow intervals of healthily-coloured skin. The spots vary in size considerably in different cases, sometimes being very little larger than a large pin's head, at other times attaining a size larger than a split pea. The intervals of healthy skin differ in size also, sometimes being so small that the eruption presents on superficial examination the appearance of uniform flushing of the skin, the individual spots only becoming fully apparent on more careful observation; while in other cases each spot is very distinctly surrounded with an area of normal colour. The eruption is accompanied by very little or no rise of temperature, but there are usually some signs of disordered digestion in the form of sensations of nausea, disinclination for food, and slightly coated tongue. As a rule, it continues for one or perhaps two days, disappearing sometimes somewhat suddenly, in other cases more gradually.

Rose-rash is noteworthy mainly on account of its liability to be confounded with measles on the one hand, and with scarlet fever on the other. When the spots are large and distinctly separated, they resemble very closely the eruption of measles; when very small and closely aggregated, the resemblance to scarlet fever is equally striking. The differential diagnosis has therefore to rest chiefly on other points than the appearance of the eruption, although slight differences in colour afford sometimes a distinction of some value. “

The distinction from measles is made chiefly by the occurrence of the eruption in roseola without any preliminary symptoms of illness, the absence of fever, and of watering of the eyes, cold in the head, and cough, such as are usually present at the commencement of measles, and the altogether slighter character of the illness. In measles also the eruption is nearly always most de-

veloped on the face, where it appears first, spreading from there downwards over the whole body ; in roseola it does not always cover the whole body, and is seldom well marked on the face, being most distinct usually on the chest or abdomen. These distinctive points, together with the fact that isolated cases of measles are rare, the disease commonly occurring in epidemics, are usually sufficient to make the differentiation between rose-rash and measles easy. It is much more difficult, when roseola assumes the form of eruption similar to scarlet fever, to distinguish it from slight cases of that very infectious disease. The colour of the eruption sometimes aids ; in roseola it is of a crimson or rose colour usually, while in scarlet fever it is distinctly scarlet. These shades, however, tend to approximate, and it is sometimes very difficult, in either of the diseases, to say whether a particular eruption should be called crimson or scarlet. When the individual shade is distinctly marked, however, it is of considerable value as a differential sign. In roseola there is very seldom any tenderness of the throat complained of, although sometimes it may be slightly reddened ; in scarlet fever there is generally some sense of dryness of the throat and discomfort in swallowing. The presence of much fever, and especially its duration for more than twenty-four hours, is strong evidence in favour of scarlet fever. Marked flushing of the face also points strongly to scarlet fever, and a somewhat dry injected condition of the white part of the eyes is very characteristic of that disease. The eruption of scarlet fever, like that of roseola, is not unfrequently partial, and most marked upon the chest rather than the face ; but a valuable point of distinction, when present, is found in the fact that the eruption of scarlet fever, even when faint in other parts of the body, is often well marked in front of the elbow and forearm and behind the knees, while roseola is very seldom or never well marked on the limbs without appearing distinctly also on the body. In some cases the difficulty of distinction at first sight is unsurmountable, and observation of the progress of the illness for twenty-four or forty-eight hours is necessary in order to arrive at a certain diagnosis. If the disease be scarlet fever, the fact is then usually made sufficiently apparent by the persistence of fever, the increase of discomfort of the throat, and the duration of the eruption.

Roseola calls for very little treatment. If no fever exists, it is not necessary to confine the child to bed, but its diet should be regulated carefully, only light and easily-digested food being allowed, and some slight aperient such as effervescent citrate of magnesia or sweet essence of senna should be given. If there is any suspicion that the disease may be scarlet fever, and not

roseola, the child should be rigidly isolated from others until a positive diagnosis is arrived at.

(c) **Nettle-rash** (*urticaria*) is another affection of the skin, which, although very troublesome and irritating, is of no serious importance regarded from the view of the general health of the child. It is usually of very temporary duration, but is somewhat apt to reappear at intervals, for two or three days after it has first manifested itself. It is generally due to the ingestion of some article of food which may not be in the least degree difficult of digestion by most children, but which in some way is especially irritating to the individual child affected. Among articles of food specially prone to excite nettle-rash in some children are various shell-fish, such as oysters, mussels, crabs, and lobsters; some fruits, especially perhaps strawberries; cured meats, including sausages and smoked tongues; and fresh pork. Some children are very liable to nettle-rash, in some cases probably having a hereditary tendency to it, and suffer from an attack whenever the stomach is at all disordered by their having eaten some indigestible food. The eruption, which may be generally distributed over the body and face, but which is more usually very partial, often affecting only a very limited area, takes the form of irregularly-shaped red blotches, somewhat elevated from the surrounding skin, and usually surmounted by a patch of exceptionally white skin, technically known as a "wheal." The blotches resemble closely in appearance those produced on the skin by contact with the common stinging nettle. Occasionally the white patch in the centre is absent, but usually, on careful inspection, a small area of somewhat paler colour can be detected in the centre of the red blotch. The blotches seldom occur singly, more generally being associated in clusters; and individually may vary in size from a shilling to a five-shilling piece or more. Their outline is generally irregular, the edges being indented, and frequently a narrow prolongation of the central wheal runs along the centre of each indentation. When the eruption appears on the face, the eyelids may be so much swollen as to almost close the eyes, the nose and lips appear enlarged, and the face generally has the aspect of being affected with erysipelas. Sometimes the tongue and interior of the mouth are also attacked with the affection, becoming swollen and discoloured. The change in appearance of the skin is accompanied by a sensation of tingling and itching of a very intolerable character, which gives rise to much restlessness, and to efforts to seek relief by scratching. The most marked feature of the malady is the suddenness with which it may disappear from one part of the body, without leaving any trace behind, and reappear in another

part immediately in an equally acute form ; or depart altogether, leaving the skin in an apparently absolutely healthy condition.

The characteristic features of nettle-rash are so peculiar that it can scarcely be mistaken for any other disease, except in the rather unusual instances where the eruption is so general over the whole body that the blotches merge in each other, and no distinct wheals appear in the centre of individual blotches. In such cases the disease at first sight presents superficially the appearance of scarlet fever ; but the extreme suddenness of the onset, the absence of fever, and the presence of distinct tingling and itching usually make the character of the disease apparent. In general also, a careful inspection will bring to light some part of the body where the eruption shows a limit, characterised by an irregular outline and perhaps by a slight wheal, indicating with absolute certainty the nature of the affection.

The Treatment of Nettle-rash is very simple. If the article of diet to which its appearance may be attributed has been very recently ingested, an emetic of one or two teaspoonfuls of ipecacuanha wine, or better, of a teaspoonful of mustard in half a tumbler of warm water, should be given, followed as soon as convenient with a dose of castor oil. If one or two hours have elapsed since the ingestion of the food, the castor oil should be administered without a previous emetic. When the eruption tends to recur after the bowels have been well acted on, abstinence from meat diet for a day or two, with two or three doses daily of fluid magnesia or effervescing citrate of magnesia, will in a few days generally effect a complete cure.

(d) **Eczema**, in a slight form, is a frequent malady of children, and is probably generally the result of a tendency inherited from the parents or more remote ancestors, and developed by the irritation of dentition, by inappropriate diet, or by residence on an unsuitable soil, or in a climate favourable to its manifestation. Children predisposed to eczema will often exhibit it during the cutting of almost every individual tooth ; and after dentition is completed, the eruption may recur at any time that the health is slightly depressed, or the digestive organs in any way irritated. The most usual sites for the appearance of slight eczema are the flexures of the knees and elbows ; more rarely the folds of the groins, and the scalp of the head. In addition to these parts, it may present itself in patches on any other situation of the body. When first affected with slight eczema the skin appears somewhat reddened, and a little more dry than usual, with a slight tendency to throw off small glistening scales. This appearance is accompanied by some itching, which is apt to be especially troublesome

during the night, frequently inducing the child to scratch to such an extent as to produce slight bleeding. The patches have usually very little tendency to extend in size. The brightness of their colour varies much from day to day, the irritation which they produce varying to some extent with the vividness of their tint. As the acuteness of the eczema increases, the skin breaks in small cracks, from which a little fluid exudes, giving the surface a somewhat moist appearance; and with the increase of the moisture the small scales disappear, and the whole surface assumes a raw and superficially ulcerated aspect. The variations in appearance from day to day are usually noticeable, and form a marked characteristic of the disease.

Sometimes eczema occurs in a much milder form, producing hardly any discoloration of the skin, and presenting itself simply as a somewhat dry and roughened patch on the skin, with a little exfoliation of very small, dry, glistening scales, never becoming so acute as to assume a reddened colour, or to give rise to itching or irritation.

As a rule, there is no difficulty in diagnosing the nature of the malady. Its favourite sites, in the angles of the joints and on the scalp, the reddened and scaly or moist appearance, the frequent variation of intensity, and the irritation markedly increased during the night, are quite characteristic of eczema. The duration of the disease is indefinite. It may last days, or weeks, or months, or years, sometimes giving rise to much annoyance, at other times subsiding to such an extent as to excite not the least discomfort. Its treatment often calls for considerable care, patience, and judgment; and when the disease persists, recourse should always be had to medical advice, as, although no risk to life is involved, the irritation and disturbance arising from its presence may very seriously affect the general health of the sufferer.

Treatment of Eczema.—On its first appearance attention should be paid to the condition of the digestion. The diet should be made as simple as possible, any excess of meat being avoided, and sugar being given as sparingly as possible. If the action of the bowels is sluggish, it should be promoted by some mild aperient given every second night, the most eligible being Gregory's powder, or compound liquorice powder. If the eczema is associated with irritation from teething, aperients are specially called for, and may be given when necessary every night for three or four nights in succession. To subdue the heat and itching some soothing ointment, spread on lint or linen, should be applied to the patches throughout the night; and, so far as possible, the child should be prevented from scratching. A very

convenient ointment for allaying irritation is formed by the mixture in equal parts of zinc ointment and Carron oil.

6. Infectious Eruptive Fevers.—The second class of eruptions referred to above includes those associated with and characteristic of some infectious fevers. Infectious eruptive fevers are characterised by certain peculiar features, which are common to them all, and which serve to distinguish them from other forms of disease. The first and most important of these is their communicability from one person to another, a property indicated in the title of “infectious” applied to them. The infective material which is the vehicle of conveyance has been shown within recent years to consist of germs of minute microscopic size, possessing to some extent individual life, and capable of being cultivated and studied in various media, such as gelatine or beef jelly, outside and apart from the human body. Usually those infection-bearing germs are transferred from the person suffering from the infectious fever to others by actual contact or by close approximation, but they may be conveyed for considerable distances in clothes, books, foods, and other articles; and when circumstances are favourable to the life of the germs, as when accidentally adhering to clothing laid aside in a drawer, without exposure to fresh air, or when enclosed in an envelope, they may retain their infectious powers for many months. When any infectious germs obtain admission to milk, they multiply with great rapidity, contaminating the whole supply of milk to which they have had access, and rendering it an infection-bearing fluid of much activity. Many severe epidemics of scarlet fever, especially, have owed their origin to the accidental distribution of milk contaminated with the germs of that disease. To some extent the same thing occurs when impure water is exposed to contamination.

These germs are present in, and are probably thrown off into the surrounding atmosphere from the skin and lungs of every person suffering from an infectious fever, from the commencement until the termination; but at different periods in different illnesses they seem to exist either in greater number or in more virulent form, as infectious diseases are found to vary in their infectious powers at different stages of their progress. How is it, then, it may be asked, that so many persons who come into intimate association with infectious diseases escape the infection? The answer is that probably every person has some power of resisting the attacks of infectious germs, this power of resistance varying much in different people, and in different states of health in the same person. The length of exposure to the attacks of the

germs is also in some cases a factor in determining the success or failure of the attack. It is frequently observed that doctors comparatively seldom acquire infectious illnesses from their patients, their visits lasting only a short time, while nurses are specially prone to fall victims, unless protected by previous attacks of the same disease.

The germs of infectious fevers all lose their power rapidly when exposed to the open air, and to the rays of the sun. It is very seldom, indeed, that infection is conveyed by means of the air alone further than a limited number of feet from the bed of the patient, except, perhaps, in the case of small-pox, the germs of which, some think, may be carried some hundred yards without losing their infectious property. In almost all cases where infection has been carried for some distance from a patient, it will be found on careful enquiry that some material vehicle has conveyed the poison; it may be a letter or newspaper, a book, a parcel, or an article of dress worn by some one who has been in communication with the invalid.

Infectious germs can also be destroyed with facility by artificial means. Exposure for about two hours to dry heat in an oven, or to moist heat in the form of steam in a boiler, effects their destruction if the temperature exceeds 200° F.; and boiling also for twenty minutes to half an hour is thoroughly effective in destroying them. Various disinfectants also, among which carbolic acid, permanganate of potash (Condy's fluid), and chloride of lime are specially worthy of mention, are reliable as destructive agents of infectious germs, when employed with proper care and in suitable strength. Some directions for their employment are given in Chapter XVI.

It has to be remarked that no satisfactory method has yet been discovered of arresting the infectious germs before they leave the patient, which, were it possible, would be the most thorough way of preventing any extension of infection. Efforts in this direction are made by anointing the skin with disinfectant ointments, but though the excretion of germs from the skin may be thus prevented, they make their escape by the breath, as well as in other excretions; and it is impossible to saturate the air with any disinfectant sufficiently to destroy the germs, without at the same time rendering it dangerous of respiration to the patient.

Stages of Infective Fevers.—Another peculiarity of infectious eruptive fevers is that all run a definite, and to a considerable extent similar course, which is characterised by four distinct stages, easily recognisable in each individual disease. The duration of these stages varies in the different forms of eruptive

fevers, but is fairly constant for each special fever. They are known as the stages respectively of incubation, of invasion, of eruption, and of desquamation.

The Stage of Incubation is that period which elapses between the reception of infection and the manifestation of any active symptoms of illness. Usually for some days after the contraction of infection no discomfort or sense of illness is experienced, and although sometimes a slight sense of malaise and physical depression may be present for a day or two before the commencement of the stage of invasion, more commonly the beginning of that stage is the first indication of illness.

The Stage of Invasion occupies the period from the manifestation of the first definite symptoms of illness to the commencement of the appearance of the eruption.

The Stage of Eruption extends from the time when the eruption first appears to its disappearance, and is followed by—

The Stage of Desquamation, which usually continues until convalescence is established.

The approximate duration of these stages in different fevers will be mentioned when the individual diseases are described.

A further peculiarity of these eruptive fevers is that one attack of any of them in a great measure protects during the whole of life from a second attack of the same disease. The protection is not absolute, as every one of them has been known to occur twice or even three times in the lifetime of an individual, but such second attacks are so unusual that the risk of them may be practically disregarded.

(a) **Chicken-pox** (*varicella*) is the mildest of the eruptive fevers. Its period of incubation is long, varying usually from twelve to nineteen days. On the other hand, the stage of invasion is very short, not exceeding twelve to twenty-four hours; and is often of so exceedingly mild a character that it is overlooked altogether, and the active symptoms appear to commence with the eruptive stage. When any symptoms are noticeable in the stage of invasion, they seldom amount to more than slight headache, want of appetite, perhaps a sensation of nausea, or even, in young children, some vomiting, and a slight rise of temperature seldom exceeding one or two degrees. The eruption appears in the form of some small red spots distributed at wide intervals over the body and face, which within a few hours change into small watery vesicles each surrounded by a faint pink ring. The change from spots to vesicles is often so rapid that the vesicles are often considered to be the original form of the eruption; but careful inspection will usually show some spots which have not undergone alteration. The

vesicles are often found to vary in size considerably on different parts of the skin, some remaining not larger than a pin's head, others increasing in size within twenty-four hours until they measure about a quarter of an inch in diameter. They are scattered irregularly over the whole body, face, and head, and never occur in isolated clusters, like the heat-spots described at the beginning of the chapter. The number of vesicles varies greatly, sometimes only a very few, perhaps ten or twenty, being noticed; at other times two or three hundred are distributed over the skin. Fresh crops are usually thrown out for two or three days after the first appearance of the eruption, and some of the old vesicles continue their increase in size, never however much exceeding a quarter of an inch in diameter. About the third or fourth day from the commencement of the eruption it attains its height, and the vesicles, varied in size, appear as small globular or ovoid blisters, glistening and opalescent, and each surrounded with a faint pink circle of skin. After this they lose somewhat their shining appearance, becoming of a dim white or yellow or brownish shade, and dry up gradually into dry brown scabs, which usually fall off the skin in from ten to twelve days from the first commencement of the eruption. This falling off of the scabs constitutes the desquamative stage of the disease. Usually on the first falling off of a scab, a very minute cicatricial scar can be observed on the skin underneath; this, however, almost invariably disappears after a week or two. Very rarely indeed is a permanent little scar, like one of the depressions due to small-pox, left behind; when it happens it is usually due to the child having irritated one of the vesicles by scratching.

The commencement of the eruptive stage of this disease is often characterised by considerable itching, which however seldom continues for more than one or two days, and after this has passed off there is very seldom any further complaint of discomfort of any kind.

Sometimes, especially in girls of from thirteen to sixteen years of age, the disease takes a more severe form, with considerable fever both in the stages of invasion and eruption, accompanied by headache and distaste for food. Even in these cases, however, there is never any cause for real anxiety. A very exceptional form also occurs in which the vesicles, instead of drying into scabs, become changed into unhealthy ulcers: its peculiar character is probably due to residence in very insanitary conditions, and it is met with very rarely indeed.

Chicken-pox under ordinary circumstances involves no risk whatever to the life or to the general health of the child. There is no special liability to any complications, nor is the invalid more

than usually susceptible to cold when suffering from it. The stage at which infection is most likely to be given to others is the desquamative stage, when the scabs are becoming detached, and may be carried away on articles of clothing, or in other ways.

The Diagnosis of Chicken-pox is not usually difficult. The appearance of the vesicles when well developed is very characteristic, the white opalescent colour, the globular or ovoid shape, the pink areola or circle round the vesicles, and the limitation of size to a diameter not much exceeding a quarter of an inch, not occurring in any other disease. When the vesicles are small and ill developed, there is a risk of mistaking them for heat-spots, but their dispersion over the whole body and on the face and head, together with the absence of any distinct hardness, is usually quite sufficient to indicate their character. When very mild, with few and ill-developed vesicles, the disease is somewhat apt to be overlooked altogether, the spots being mistaken for small pimples of an innocuous character. The presence of chicken-pox in such cases may be considered very probable, if a crop of small pimples with slight watery heads appear simultaneously over the body and on the face. Usually a careful examination in such mild cases will show on one or two of the spots vesicles of sufficient development to indicate with certainty the nature of the illness.

No active treatment is required. If feverishness or sickness is present the patient should be kept in bed for one or two days, and limited to light food such as milk, milk puddings, and soups; and the action of the bowels should be regulated. Itching is best allayed by warm baths, and by inunction of vaseline.

Caution.—In order to prevent the spread of infection, the invalid should be isolated until every scab has dropped off; and during the desquamative stage a warm bath, to which some Condly's fluid or some carbolic acid has been added, should be given night and morning. It is not necessary to fumigate rooms in which a patient with chicken-pox has been confined, but the carpet of the room should be beaten in the open air, the floor washed with carbolic acid and water, of a strength of one part of carbolic acid to forty of water, and the room exposed to a full current of fresh air for a whole day.

(b) **Small-pox** (*variola*) is usually encountered in the present day only in the very mild form it assumes when its severity has been modified by the influence of vaccination in infancy. In this mild form, to which the name "varioid" is usually applied, small-pox is met with almost exclusively in occasional epidemics, which occur in England generally at intervals of several years. Anything more than a reference to this disease would be out of place in this work,

as, even when the attack is very slight, the stage of invasion, which occurs after an incubative period of twelve days, is nearly always characterised by symptoms of such acuteness as to necessitate medical attendance. Those take the form of severe headache, moderately high temperature, often reaching to 104° F., considerable sickness, and markedly defined pain in the centre of the back. If small-pox is prevalent, the presence of these four symptoms is almost certain evidence of the commencement of an attack. The stage of invasion usually lasts three days, after which the eruption appears in the form of small red pimples rather hard and "shotty" to the touch, disseminated over the face and body in varying numbers. These pimples may in a day or two develop into small vesicles, or they may gradually fade, and recovery at once ensue. The peculiar feature of small-pox modified by vaccination is that, instead of going through the usual course of unmodified small-pox, it is usually cut short soon after the appearance of the eruption, recovery following immediately, and the desquamative stage being so little marked as almost to escape notice. In unmodified small-pox the pimples gradually change into vesicles, which, at first very small, increase up to the eighth day after the appearance of the eruption, until they attain the size of a threepenny or sixpenny piece. On the eighth day the vesicles become inflamed, and suppurate, their contents changing into matter; they then commence to dry up or to burst, and form hard scabs, which usually fall off in the course of ten days or a fortnight, leaving depressed marks on the skin. In the modified form the disease seldom goes beyond the point of the formation of small vesicles, which dry quickly and fall off, leaving usually no mark behind. Modified small-pox is probably quite as infectious as the unmodified form, with which it may infect persons who are not protected by successful vaccination. Care should always be taken, therefore, that no one who has not been successfully vaccinated is allowed to come within reach of infection, and "to make assurance doubly sure," it is usually best that every one in the house in which a case occurs should be vaccinated as early as possible. There is undoubted evidence to prove that if vaccination be performed within the first five days of the incubative stage of small-pox, it will modify very materially the course of the disease.

(c) **Scarlet Fever, or Scarlatina**, is a disease which varies very much in its severity in individual cases, and in different epidemics. Sometimes it is so severe, and its course so rapid, that it may cause death in twenty-four hours; at other times so slight as to involve to the sufferer only a few days' discomfort. Even in the slightest instances, however, there is always some risk of serious complica-

tions, and it is therefore desirable that all cases of scarlet fever should be placed under medical care and supervision.

The stage of incubation of scarlet fever is usually short, varying from twenty-four hours to six days. At the end of this stage the child is attacked with headache, sickness, sore throat, sometimes some shivering, and occasionally, in young children, convulsive fits; and usually considerable fever is present, the temperature not unfrequently rising to 104° F. The stage of invasion lasts for about two days, after which the eruption appears. In mild cases the stage of invasion may be shortened to one day; in very severe cases it may be prolonged to three or even four days. The eruption presents itself usually as a general flushing and reddening of the skin of the face and body, which on close inspection is seen to be caused by innumerable small scarlet spots, each surrounded with a small circle of paler red. The spots, which are about the size of a small pin's head, are generally so closely aggregated that the paler circles round them merge entirely in each other, and thus produce the general flushing of the skin. The eruption is usually at first most apparent on the neck, behind the ears, on the chest and abdomen, and on the front of the arms near the elbows. Generally in the course of twenty-four hours it has spread over the whole body; but in some cases the eruption is partial throughout the disease, limiting itself perhaps to the body and thighs and arms; such instances, however, are quite exceptional. The sore throat, which is nearly always present to some degree during the stage of invasion, usually increases in severity in the eruptive stage; sometimes a spotted appearance is noticed on the roof of the mouth, as if it also were affected with the eruption.

The rash usually remains of a vivid scarlet hue for three or four days, after which it fades into a more dusky shade, and gradually disappears. The stage of desquamation follows, sometimes immediately, sometimes after the lapse of two or three weeks, and continues usually until at least six weeks have elapsed from the commencement of the illness. The more acute the eruption has been, the more early, as a rule, desquamation commences, and the more marked in character it is. Sometimes the external skin comes off in large flakes and shreds; in the case of the fingers it may come off in moulds like the fingers of a glove. More commonly it is shed in small scales, with a few larger shreds here and there. Desquamation continues longest in the hands and feet; not unfrequently the process in the feet is not completed until the expiration of nine or ten weeks from the beginning of the fever. Occasionally a slight second desquamation takes place over the body after the first is finished.

- **The Diagnosis of Scarlet Fever**, when the symptoms are well marked, is very easy ; when they are not well marked it may be exceedingly difficult. In ordinary cases the nature of the disease is indicated clearly by the somewhat severe premonitory symptoms, the inflamed throat, the degree of fever, and the characteristic scarlet colour and maculated appearance of the rash. Slight cases, where there is scarcely any soreness of throat, very little fever, and a somewhat undefined rash, are apt to be mistaken for rose-rash. The existence of any soreness of throat should always be regarded as suspicious. When there is any fever with rose-rash, it is generally of short duration, subsiding within twelve or twenty-four hours ; in scarlet fever the fever tends to increase for the first few days ; frequent observation with the clinical thermometer is therefore of value in making the distinction. The rashes are sometimes very similar. The chief points of difference are the more scarlet hue of scarlet fever, its presence generally rather marked in the face, which is unusual in roseola, and its more general distribution over the whole body and limbs, roseola being usually present on a more limited area. A very characteristic feature of scarlet fever, when present, is a dry injected appearance of the white part of the eyes. The other diseases for which scarlet fever may be mistaken are measles and röteln ; the points of difference will be mentioned when these diseases are described.

Scarlet fever is an exceedingly infectious disease in all its stages, most so during the stage of desquamation. The utmost care in isolation and disinfection must be exercised to prevent its extension, and every possible channel of communication should be guarded. The necessary precautions have already been mentioned in the chapter on Nursing. Within recent years many well-managed hospitals for infectious diseases have been erected in various towns in England ; and where household arrangements do not conveniently admit of rigid isolation of the patient, the propriety of sending him to one of those institutions should be taken into consideration. Parents are not unnaturally inclined to think such a course unkind to the child, but it is often dictated by the best interests both of themselves and of their other children, while the invalid is usually after a day or two more happy than he would be at home. At home he must be imprisoned with one person—often a nurse previously unknown to him—for at least six weeks, without the visit of any friends or playfellows ; in the hospital there are other children suffering from the same disease, who can spend with him the tedious days of convalescence and desquamation in amusements and games. And as the hospitals are

usually built specially for such diseases, the conditions are all such as to place the invalid in the circumstances most favourable for complete recovery.

(a) **Measles** is the most common of all infectious eruptive diseases, a distinction which it owes probably to its very infectious character during the stage of incubation. The other eruptive fevers are only very slightly infectious during the incubation; measles, on the other hand, in most cases is transmitted at this stage, before any symptoms are present rendering it possible to recognise in the transmitter the existence of any illness whatever. The incubation stage of measles generally lasts about twelve days, sometimes a little less. During the last two or three days of this period there may be present a little nasal catarrh, with slight weakness of the eyes, and general signs of slight cold; but this is not invariably the case. The stage of invasion is characterised by feverishness, not generally at all severe, slight headache, cold in the head, watering of the eyes, intolerance of light, and some nausea and loss of appetite. There is also frequently some dryness of the throat, rarely amounting to actual soreness, a little hoarseness of the voice, and a slight dry cough. Very often those symptoms of invasion are so slight as not to necessitate confinement to bed; sometimes indeed they are almost entirely absent, so that the patient is going out of doors until the eruption appears. The duration of the stage of invasion is generally about four days. The eruption usually appears first on the face and the neck, in the form of dusky crimson spots very slightly elevated, like pimples, each surrounded by a little circle of paler red skin. As the spots increase in number, and become closely aggregated, the paler circles coalesce, and the whole skin becomes somewhat swollen and flushed, and covered with small prominent darker-coloured spots. Commencing on the forehead and neck, the eruption usually spreads in the course of about twenty-four hours downwards over the whole of the body and limbs. The spots frequently tend to group themselves in a crescentic form, and when the eruption is not close enough to obliterate all the healthy coloured skin between the spots, a series of small red crescents, varying in size from a quarter of an inch to an inch in diameter, may present themselves on the skin, each made up of a group of spots with their accompanying pink borders. As the eruption is coming out the fever usually increases considerably, the temperature rising to 104° F. or 105° F., but it generally subsides immediately the rash is fully developed. Coincidentally with the development of the eruption the catarrhal symptoms increase, the cold in the head, the discharge from eyes and nose,

and the cough being often very troublesome. There is often also considerable itching of the skin.

Within one or two days after the appearance of the rash, it begins to fade somewhat in brightness, the change being first noticed in the forehead and neck, where the eruption first appeared, and gradually extending to the rest of the body. The prominence of the papules at the same time diminishes, and in three or four days all traces of eruption are gone, with the exception of a somewhat mottled appearance of the skin in some parts of the body. As the rash subsides desquamation occurs usually in a very slight and inconspicuous manner, the skin coming off in minute silvery scales. Not unfrequently the desquamation is so slight as to be almost imperceptible. It is generally completed within a week of the disappearance of the eruption.

The Recognition of Measles is very easy when the symptoms are well marked. The catarrhal condition of the eyes and nose, the troublesome cough, the feverishness, and the crimson papular eruption, are quite sufficient to indicate distinctly the nature of the illness. When the attack is mild and ill defined, it may be mistaken for mild scarlet fever on the one hand, or for r  theln or roseola on the other. From scarlet fever it is distinguished by the more papular character of its eruption, by the crimson colour as contrasted with the scarlet of scarlet fever, and by the presence of some amount of coughing, a feature rare in scarlet fever. The appearance of the eyes in measles also differs much from their aspect in scarlet fever. In measles the eyelids are swollen, and the eyes flushed and watery ; in scarlet fever the eyelids are not swollen, and the eyes are dry and injected. From roseola measles is distinguished by its comparatively greater severity, and by the presence of catarrhal symptoms and cough. Roseola is a very mild disease, with little or no fever after the first day, and no catarrhal symptoms, except rarely very slightly inflamed throat ; in measles there is nearly always some fever present as the eruption develops, as well as some catarrhal symptoms in the nose, and some amount of coughing. The eruption also in measles is usually more marked, and more universally distributed over the body, than in roseola.

- From r  theln it is often exceedingly difficult to distinguish measles. Points of difference will be mentioned when the former disease is described.

Treatment of Measles.—Mild attacks of measles call for very little treatment. The patient must be kept in bed for some days, and the room must be maintained at a uniform and moderately

high temperature. The great risk in measles lies in complications affecting the lungs. Bronchitis and inflammation of the lungs are the most frequent serious complications of measles, and they are best guarded against by a temperature in the sick-room never allowed to fall below 64° F., and raised when necessary to 70° F. When cough is troublesome, a steam-kettle should be kept constantly on the fire; if there is indication of difficulty in breathing, the chest should be enclosed in linseed poultices. When the cough is very frequent and hard, much relief is often afforded by the administration of five or ten drops of ipecacuanha wine in a teaspoonful of glycerine every three hours. When thirst is troublesome the patient should be allowed to drink freely barley water flavoured with lemon juice; cold water, in small quantities at a time, is also very grateful and innocuous. When the skin is hot and irritable much comfort is afforded by frequent sponging with tepid water, or vinegar and water.

Any indication of complications affecting the lungs, such as increased rapidity of breathing, much wheezing in the chest, or rise of temperature, after the full development of the eruption, should always be considered as necessitating resort to skilled medical assistance.

(e) **Rötheln**, or Epidemic Roseola, as it is sometimes called, is an infectious disease which occurs occasionally in epidemics, and which in some features resembles slight measles, in some mild scarlet fever. Its stage of incubation varies from six to twenty-one days, and is usually followed almost immediately by the stage of eruption, the intermediate stage of invasion seldom lasting more than a day, and often being absent altogether. The eruption usually resembles that of measles, but the spots are not generally so closely grouped, remaining discrete, with small distinct areas of pink skin round each spot. There are at first no distinct catarrhal symptoms of eyes and nose as in measles; but the throat is generally rather sore, red, and dry, as in mild scarlet fever. As a rule, there is no cough. A very characteristic feature, which is nearly always present in some degree, is enlargement and tenderness of the glands under the skin at each side of the neck.

Sometimes the eruption resembles closely that of mild scarlet fever, and when this is combined with some degree of inflamed throat, it is almost impossible at once to make a definite diagnosis. The main points of distinction are that the eruption of rötheln usually fades within two days, while that of scarlet fever as a rule lasts three or four days; that tenderness of the glands of the neck is unusual in the beginning of scarlet fever, while very common in rötheln; and that scarlet fever concludes with distinct des-

quamation, whereas in r  theln no perceptible desquamation occurs. In rare cases all points of distinction fail, and the disease must be treated with the care due to scarlet fever, although the probability may be in favour of the milder disease r  theln.

Treatment of R  theln.—When the diagnosis of r  theln is certain, the treatment is very simple. There is practically no risk of any dangerous complication, and the disease is always mild. Two or three days' rest in bed, with light diet, is generally all that is necessary ; and frequently recovery is so rapid that the patient is able in a week from the commencement of the illness to go out of doors, and resume ordinary habits of life.

Two infectious diseases are common in children, which are not characterised by any eruption of the skin, but which in some other respects bear a considerable resemblance to the infectious eruptive fevers just described. These are Mumps and Whooping-cough.

Mumps, or *Parotitis*, is a febrile infectious disease characterised by swelling and tenderness of some glands situated at the side of and underneath the lower jaw, and known as salivary glands, on account of their function of secreting saliva. Its stage of incubation varies from eight to twenty-one days, during the latter part of which there is sometimes experienced a feeling of lassitude and malaise, without any definite symptoms of illness. The stage of invasion commences with sensations of chill, accompanied with rise of temperature, headache, and occasionally nausea and vomiting ; and after a few hours, or perhaps a day, local symptoms present themselves in the form of slight swelling and tenderness at the side of the face in front of and below the ear, or underneath the lower jaw, with stiffness and pain in moving the jaw for the purpose of eating or speaking. Sometimes the swelling at first is present only at the side of the face, sometimes only under the jaw, sometimes in both situations at once ; occasionally it affects at first only one side of the head, in other cases both simultaneously. When it appears at first at the side of the face, it usually in a few days afterwards affects the region under the jaw on the same side ; conversely, when it attacks the glands under the jaw first, it generally invades that on the same side of the face afterwards. When it attacks at the commencement only one side of the face, it usually proceeds to the other side in a few days ; when both sides of the face are affected at the same time, they often differ considerably in the extent of the swelling. For the first day or two the swelling is usually inconsiderable, but it generally increases gradually for four or five days, until the side of the face presents a large and tense swelling, occupying the greater part of the cheek from the eye above, to the border of the lower jaw below, and bounded

behind by the ear, the front part of which is pushed outwards by the swelling. Underneath the lower jaw the chin is seen to be very full and swollen, as if the upper part of the neck had suddenly become very fat. The skin over the swollen gland is seldom at all discoloured, but becomes tense and glistening from being stretched. Not unfrequently there is some deafness and pain in the ears, due to the pressure of the swollen glands.

After remaining swollen and tense for a few days, the glands become softer and commence to subside, those which were first attacked subsiding first. As the glands diminish in size, the skin covering them loses its tenseness, becomes somewhat dry in appearance, and usually desquamates in small scales.

Mumps is a very infectious disease, and may affect persons of all ages who are not protected by a previous attack. It is not a malady of much gravity, but gives rise to a great deal of discomfort, which usually bears some proportion to the age of the patient. Babies and young children generally take it very mildly, older children in a more marked form, while adults often suffer very severely. Like measles, it is markedly infectious during the stage of incubation, as well as throughout its whole course.

Treatment of Mumps.—Active treatment is not as a rule called for. The patient should be kept warm, but not necessarily in bed, and the diet should be moderately light and nutritious. Attention should be paid to the regular action of the bowels. To relieve the stiffness and discomfort arising from the swollen glands, gentle friction once or twice daily with some anodyne liniment, such as opium liniment, or equal parts of belladonna and camphor liniments, may be employed; or, if more grateful to the invalid, compresses of warm water, or linseed poultices, may be applied continuously. Frequent sponging with warm water, followed by the application of cotton wool, often affords much comfort. In all cases, however slight, the glands should be protected from exposure to cold by being constantly covered with a light silk handkerchief or small woollen shawl.

Whooping-cough, or *Pertussis*, is an infectious fever of an exceptional character. It is not characterised by an eruption, its duration is more indefinite than that of the eruptive fevers, and there is no stage corresponding to the stage of desquamation in those diseases. Like them, however, it has a distinct stage of incubation and of invasion, and it resembles them in being infectious throughout its whole course.

The stage of incubation of whooping-cough occupies from a week to a fortnight, during the later days of which a certain

amount of cough may be present. The stage of invasion then commences with slight fever, loss of appetite, and perhaps fretfulness, some amount of sneezing, cold in the head and eyes, and occasionally a little dryness of the throat. Cough is usually present from the commencement of this stage, generally most noticeable at night, and most commonly barking and croupy, sometimes sharp and ringing in character. It is occasionally very incessant during the first few nights, interfering much with sleep. At this period no characteristic whooping is present. The amount of fever is generally very slight, and may only be detected by frequent use of the clinical thermometer, which will show a rise of temperature to perhaps 101° F. towards evening. This stage may last for a week to ten days, after which the disease enters what is known as the spasmodic stage, when the catarrhal symptoms diminish, the cough appears in more distinct spasmodic fits, and the characteristic whoop begins to assert itself. Each fit of coughing consists of a series of short, quick coughs, during which the face becomes swollen and reddened, followed immediately by a long inspiration, which soon assumes the shrill whistling or whooping sound from which the disease derives its name. It is seldom that a distinct whoop is heard earlier than two weeks from the commencement of the stage of invasion, and sometimes it may not occur until the end of the third week. In very slight cases no distinct whoop may be heard throughout the whole illness. In moderately severe cases three or four or more fits immediately succeed each other, a whoop intervening between each fit; and the succession may conclude with the expectoration of some whitish mucus, or even with sickness, and vomiting of the contents of the stomach. Even when no actual vomiting occurs, at the end of an attack there is usually some sensation of nausea experienced.

The spasmodic attacks of coughing occur with varying frequency. In mild cases there may be only three or four attacks during the day-time, and one or two throughout the night. In more severe cases the attacks may occur as often as once every hour during both night and day, and in very bad cases of whooping-cough a much greater frequency even than this may be encountered. The frequency and the length of the fits tend to increase during the first two or three weeks of the spasmodic stage, afterwards usually diminishing gradually, as convalescence approaches. The transition from the spasmodic stage to the convalescent stage is gradual. If the disease has not been complicated with any serious lung affection, such as severe bronchitis or inflammation of the lungs, usually after from four to six weeks from

the commencement of the stage of invasion the spasmodic attacks will become much less frequent, and the cough will be looser in character, with fewer fits in each attack, and with diminished whoop. Complete recovery, with entire absence of cough, will then result sooner or later according to the season of the year and the climatic conditions. If the affection has occurred in spring or early summer, the convalescent stage may not occupy more than one or two weeks, after which no cough would be present; if, on the other hand, the disease has manifested itself in autumn or winter, convalescence may be prolonged throughout two or three months, during which some amount of cough remains, and an occasional whoop is audible.

The Diagnosis of Whooping-cough presents difficulty only when in its early stage, or when the disease is exceedingly mild. Before any whoop is developed, evidence of the nature of the illness is afforded by the peculiar sudden and spasmodic character of the cough, by its occurrence once or twice or oftener during the night, waking the child from sleep, and by the redness of the face, and occasional tendency to sickness, immediately following the fit of coughing. Suspicion of whooping-cough should always be excited when two or three children associated together, who have never had the disease, begin to cough simultaneously; and this suspicion would be much strengthened if any of them exhibited a slight rise of temperature for a few days without any apparent cause other than the cough. The possibility of having been exposed to infection should also be taken into consideration as rendering the diagnosis more probable.

In very slight cases, where no whoop is present from beginning to end, the diagnosis must rest on the spasmodic nature of the cough, on its occurrence throughout the night, awaking the child suddenly, on the redness of face and tendency to sickness excited by the cough, and, where two or more children are associated together, on its infectious character. Every infectious cough which lasts more than a few days is whooping-cough.

Treatment of Whooping-cough.—Simple cases of whooping-cough require very little treatment. Unless the weather is exceedingly mild, the invalid should for the first three or four weeks be confined to one room, the temperature of which should be regulated so as to be as uniform as possible, and not to fall below 60° F. at any period of the day or night. If much bronchial catarrh is present, a rather higher temperature may be necessary, and the employment of a steam-kettle may be desirable. Confinement to bed is not necessary in uncomplicated cases, but the invalid should be clothed warmly, and should not be exposed to draughts in any

way. The diet should be light and easy of digestion, any disorder of the stomach usually aggravating considerably the severity of the cough. The chest should be rubbed well once or twice daily with some stimulating liniment, such as liniment of ammonia or of turpentine. When the cough is troublesome at night, its frequency may be diminished by impregnating the atmosphere of the room with carbolic acid or creosote. This can be effected either with a special vaporising arrangement, such as is sold by most chemists, or, more simply and equally effectively, when a steam-kettle is used, by adding a little carbolic acid or creosote to the water placed in it. It is found that any disturbance occurring during the night is apt to excite a fit of coughing; care should therefore be taken that the invalid is not subjected to any unnecessary noises, or other disturbing influences. As convalescence approaches, a little more liberty may be allowed; on fine days the patient may be taken out, and when the weather does not admit of this, change to another room during the day is advantageous. When convalescence is fairly established, change of air is of much value in completing the recovery. The change should be as thorough as possible; children who have been residing inland should be sent to the sea-side, while those whose ordinary residence is near the sea should be taken to some dry and, where convenient, elevated situation inland.

The complications most likely to arise in whooping-cough are excessive sickness, and inflammatory affections of the lungs, including bronchitis. When bronchitis supervenes, the cough often loses to some extent its distinctly spasmodic character, becoming more frequent and less whooping. At the same time the breathing becomes quickened, and wheezing or gurgling noises are heard within the chest. If inflammation of the tissue of the lungs occurs, the temperature rises, the breathing is much quickened, and signs of irritation and fretfulness usually present themselves. The presence of either of these complications calls for skilled medical advice.

Occasional complications of whooping-cough are **bleeding from the nose and convulsions**. It is very seldom that the bleeding occurs to an extent sufficient to do harm or excite anxiety. When excessive, the child should be laid on its back, with the head elevated, and a handkerchief soaked in cold water, or better, a small lump of ice, placed on the forehead, above the nose. The elevation of the hands and arms above the head is also of some service in arresting bleeding from the nose.

Convulsions should be treated by placing the child in a warm bath of about 98° F.; and if any disturbance of digestion is suspected, an emetic of ipecacuanha wine should be given.

Responsibility of Parents in Relation to Infectious Diseases.

—A considerable responsibility rests on parents in relation to the infectious diseases just described. There is no doubt whatever that their prevalence could be much abated, if due precautions were taken, when single cases occur, to prevent the spread of infection, and if convalescent patients were always properly isolated until all risk of infection from them had passed away.

In view of the fact that all are infectious to some extent during the stage of incubation, it is obviously proper that children who have incurred known risk of infection should be isolated from others, until the longest period of incubation of the particular disease has expired. Thus when a case of measles occurs in a house, every child resident in it should be withdrawn from all association with other children, until at least fifteen days have elapsed since there has been any contact with the invalid. If the original case is not isolated strictly—a course which is rarely taken with measles, on account of the extreme probability of infection having been disseminated before the character of the illness was apparent—no child in the house should be allowed to associate with others until fifteen days after complete convalescence of the latest patient. The same rule applies to all the other infectious diseases, allowance being made for the different duration of their periods of incubation.

The prolonged convalescent stage of whooping-cough, and of scarlet fever, during the whole of which infection may be conveyed to others, calls for great care and consideration. In whooping-cough it is practically impossible usually to confine the patient to one room until all risk of infection disappears, as outdoor exercise and change of air may be necessary to establish the cure. The one course to pursue is to avoid as much as possible contact with other children, and to select, as a place of change, some situation where a reasonable amount of freedom of movement can be obtained without risk of communicating the disease. In scarlet fever it is best to maintain the isolation until all desquamation is completed, with the exception of the feet; if these are then bathed thoroughly with carbolic acid and water of the strength of 1 to 20 night and morning, and the stockings worn be boiled before being sent to be washed, the convalescent patient may mingle with others without risk. In London some convalescent homes for scarlet fever patients exist, to which they can be sent at the very commencement of convalescence; and it is probable that similar arrangements will soon be available in other large towns.

After scarlet fever, all the contents of the room in which the

patient has been confined should be disinfected by some expert in disinfection; in most districts this duty is now undertaken by the sanitary authorities. Thorough disinfection of the same character is also required after small-pox; but in the case of measles, chicken-pox, r  theln, or whooping-cough it is generally considered sufficient to expose the room thoroughly to the free ingress of fresh air for one or two days, to air well the bedding and bed-clothes, to take up the carpet, if any, and have it beaten, and to wash the floor with a weak solution, about 1 in 50, of carbolic acid.

7. Parasitic Diseases are diseases resulting from the presence of some animal or vegetable parasite, which derives its nourishment from the person attacked, and grows, and frequently multiplies, at his expense. Strictly speaking, the infectious eruptive fevers are parasitic diseases, as the bacteria which convey the infection, and which are present in the blood as an essential part of the disease, are undoubtedly of parasitic character; but in general the term is restricted to diseases in which the parasite is of a more conspicuous and tangible character. The disease already described under the name of "thrush" is a typical instance. A few other common ones will now be described.

(a) **Ringworm** affecting the scalp is a common disease in children, due to the development at the roots of the hair of a vegetable parasite, named scientifically *trichophyton tonsurans*. Its presence is usually indicated first by the appearance on the head of one or more spots, more or less circular in shape, on which the hair appears thinner, or is absent altogether, while the skin has lost its smoothness, presenting a somewhat rough and pimply surface. The spots may vary in size from a threepenny piece to a shilling or larger; and tend to spread in every direction, losing to some extent their circular shape, and becoming irregular in outline. As the circumference of each spot extends, the centre may become smoother and more healthy-looking, the parasite exhausting the nutrition there, and spreading out from the centre in search of healthy hairs. If any spot is examined carefully, it will be observed not only that the normal hair is much thinner, or is absent altogether, but also that short broken-off stumps of hair are to be seen scattered over the spot, the remains of normal hairs which have been attacked and broken off by the invasion of the parasite. These short stumps are the most characteristic sign of the disease, and when present to any extent indicate with certainty its nature. Any one in the habit of using a microscope can verify the presence of the parasite by pulling out one of the short stumps and examining it under a moderately strong power. It will be seen not only surrounding the root, but actually invading

the hard tissue of the hair, in the form of innumerable small round spores.

The disease is of very indefinite duration, if not subjected to active and skilled treatment. The spots may increase in size until they coalesce, and in time the whole of the scalp may be affected, all the hair being lost. This may continue for months or years, after which apparently the parasite becomes exhausted, healthy action of the hair follicles is set up, and the hair again grows normally.

Ringworm of the scalp is very infectious, spreading from one child to another with great facility. Adults, however, are very seldom indeed attacked with it, their hair apparently possessing a resisting power which the parasite is unable to overcome.

Successful **treatment** must be carried out under skilled medical advice. Even with the utmost care, it will occupy at least three months; and often six months will elapse before the cure is complete. The rapidity of cure is determined much more by the thoroughness with which the treatment is applied, than by the selection of the individual remedy to be used. Perfunctory application of remedies is practically useless; and mothers will find generally that it is best to take the entire management into their own hands, instead of leaving it to nurses or attendants; feeling assured that perseverance, energy, and hopefulness in the application of prescribed remedies will ultimately result in success.

During the course of the disease children affected must be isolated from others, but confinement to the house is neither necessary nor desirable. The constant use of a silk or linen skull-cap during both day and night, while the treatment is being carried out, is of much value in preventing the dissemination of the fungus which gives rise to the malady.

(b) **Itch**, or Scabies, is a skin disease resulting from irritation caused by a small animal parasite called an *acarus*. It is always acquired by direct infection, the little animal making its way from the skin of one person to that of another, either by direct contact or by transmission in articles of clothing. The symptom which usually first calls attention to its presence is intense itching, commonly worst soon after the child is put to bed. Careful examination of the skin at this time will generally reveal the presence of some small elevated pimples, the heads of which are often torn off by the amount of scratching induced, and replaced by small specks of blood. These pimples are usually seen first in the angles between the fingers, but may occur on any other part of the skin. As the disease progresses the skin shows general signs of irritation, becoming roughened and pimply at different places, and

scarred with traces of severe scratching. The face almost invariably escapes attack. The duration of the affection is unlimited, continuing until proper means of cure have been successfully applied.

The diagnosis rests mainly on the sites of the irritation, associated with distinct evidence of contagion. If two or more children or adults in one household suffer for a little time from severe itching, becoming intensified on going to bed, and if signs of irritation are visible between the fingers, the probability is very strong that they are suffering from scabies. Absolute certainty can only be attained by the discovery of one of the *acari* causing the affection, the search for which calls for some patience and medical skill, as it is minute in size, and usually concealed under the skin.

Treatment of Itch.—When the disease is diagnosed the cure is easy. The little animal upon which it depends is destroyed by the thorough application of sulphur to the skin. For one or two nights successively the patient should be given a warm bath, then rubbed well all over the skin of the body with sulphur ointment, the face and head being omitted, and put to bed clothed in the under-garments worn during the previous day. In the morning these garments should be removed, another warm bath given, and clean underclothing put on. After this has been done two nights in succession the cure is usually complete, but it is generally safer for a few nights afterwards to rub some sulphur ointment into those parts of the body most severely attacked, so as to ensure complete eradication.

(c) **Thread-worms**, or *Ascarides*, are small whitish thread-like worms, varying in length from about a quarter to half an inch, which infest the lower bowel of many children, and often create considerable itching around the external opening of the bowel. During the day they remain within the bowel, and give rise to little or no discomfort, but at night they are apt to make their way outside, causing restlessness and itching. Occasionally they wander so far that they may be found on the bed sheets, and it is probable that sometimes when two children are sleeping together they migrate from one to the other.

Suspicion of the presence of thread-worms in young children is usually aroused by some indications of irritation of the digestive canal. Restlessness at night, talking in sleep, occasional grinding of the teeth, twitching of the face, and sometimes convulsions, call attention to the presence of some source of irritation, and careful examination of the motions of the child for a few days will demonstrate their presence, if they exist in any quantity. The thread-worms, when present in the motions, are easily recognised by

their whitish colour and thread-like appearance, their length, which varies from one-fourth to three-fourths of an inch, and occasionally by their power of movement. Older children will complain of itching around the opening of the bowel, a situation which is very little liable to suffer from irritation in children from any other cause than the presence of thread-worms.

It is somewhat doubtful how the disease, which is very common, is usually acquired. The microscopic eggs of the animals must be swallowed attached to some food, and it is probable that raw fruit and uncleaned raw vegetables are a frequent vehicle of infection. It is a matter of no doubt that the affection is frequently intensified by want of cleanliness of the hands of the patients. The thread-worms set up an irritation round the opening of the bowel, which the child attempts to allay by scratching with the nails; eggs of the thread-worm are often adherent to the skin in that situation, and become lodged under the nails, from whence they are conveyed to the mouth of the child.

Thread-worms should never be considered as a necessary evil to be put up with in children. They do considerable injury, not only by the irritation they give rise to, but also by their secondary effects, and should be combated by skilful medical treatment. Their transmissibility by unclean hands and nails, referred to above, should impress upon mothers and nurses the absolute necessity of aiding medical treatment by strict attention to cleanliness.

8. Diathetic or Constitutional Diseases are diseases resulting from some constitutional taint or predisposition, which may be either inherited, or developed by various insanitary conditions of life, and which are frequently due to a combination of these causes. In children the most common of these diseases are rheumatism, scrofula, and rickets.

(a) **Rheumatism** as it occurs in children is met with in three forms,—acute rheumatic fever, subacute rheumatism affecting one or more joints, and rheumatism of the muscles. Perhaps the most common of the three, and certainly the most insidious, as its apparent slowness not unfrequently induces neglect, with serious ulterior consequences, is subacute rheumatism in a mild form, affecting at most two or three joints. Both this form and acute rheumatic fever are prone to be complicated with inflammatory affections of the valves of the heart, resulting in time in chronic heart disease; and this complication occurs almost as frequently in slight attacks as in severe ones. It is unnecessary to describe acute rheumatic fever, as it is an illness of such severity as invariably to demand medical attendance: the description given

here will be limited to mild attacks of subacute rheumatism of the joints, with a few remarks on muscular rheumatism.

The first and most striking symptom of rheumatism is pain in some particular joint or joints, increased by movement of the joint, and accompanied usually by some tenderness on pressure. When a child is not old enough to complain verbally, it will be noticed that there is reluctance to move one or other of the limbs, a tendency to hold the limb in a stiff position, and a disposition to cry upon movement. If the various joints be pressed by the hand, or moved gently, the child will show symptoms of discomfort and pain. Generally associated with pain, almost from the commencement of the illness, is some degree of swelling of the joint affected. The swelling is frequently not well marked, but is usually easily detected if comparison be made with the similar joint on the opposite side of the body. Sometimes it is considerable, and causes tension of the skin with a puffy semi-translucent aspect. It is seldom that the skin is at all discoloured. Some slight amount of fever may or may not be present; there is usually observable some impairment of digestion, and slight lassitude and disinclination for play. The pain and swelling may continue for a few days, and then disappear altogether, leaving the child apparently well; or they may appear in another joint, somewhat prolonging the illness.

Subacute rheumatism is seldom a disease of much severity or long duration, and its importance arises mainly from the possibility of its being complicated with some inflammation of the valves of the heart, which gives rise to no immediate symptoms, but may make itself apparent either soon afterwards, when the rheumatism has disappeared, or in later years of life. This form of heart affection may result from the very mildest attack of rheumatism of the joints; occasionally, indeed, it occurs when the joints are apparently quite unaffected; a slight degree of fever, and, perhaps, some little stiffness, alone being present to indicate the rheumatic nature of the illness. It is in order, as far as possible, to prevent the occurrence of heart complications, that early recognition and early treatment of the very mildest rheumatic attacks are so important. The recognition must be based on the coexistence of pain and slight swelling, in the absence of any injury likely to have caused them. It is when only one joint is affected that the difficulty of diagnosis mainly presents itself. Children in their play are apt to strain joints slightly, and may complain of pain or stiffness for a few days afterwards. The distinction lies chiefly in the character of the swelling. When a joint has been injured by accident there will not unfrequently be

seen some discoloration from bruising, and when no signs of bruise are present, the swelling is soft, and of a fluid character to touch; when affected with rheumatism no bruising is noticeable, any slight discoloration present is of pinkish hue, and the swelling tends to be rather puffy and doughy when handled. In rheumatism the tenderness to touch, and pain on movement, of the joint are usually greater than in inflammation of a joint from accident. When two or more joints are affected, there is little room for doubt, as it is very rarely that more than one joint is injured by accident at one time. Complaints of pain in the limbs from children should always excite suspicion of rheumatism. Children are not prone to make complaint of pain unless there is reason for it, and attention should always be directed to discovering, if possible, the source of the discomfort.

The proper treatment, when any symptoms of rheumatism affecting the joints are observed, is to confine the child to bed, clothed in flannel, and placed between blankets without any sheets, to restrict it to milk food, and to place it under medical supervision as early as possible.

Children occasionally suffer from rheumatism affecting the muscles. In this form there is no tendency to complications affecting the heart; and as the pain is seldom acute, the malady is one of very minor importance. Muscular rheumatism may occur in any part of the body; the muscles of the back and shoulders are perhaps the most frequently affected. The symptoms are pain, usually increased by some particular movements, some degree of stiffness, and occasionally a little tenderness on pressure. When these three symptoms are found in a child otherwise well, and nothing further is noticeable to which they might be referred, the probability is that they are the result of muscular rheumatism. The duration of this form of rheumatism is short, seldom exceeding one or two days. It is generally the result of some exposure to draught on a limited part of the body, and seldom calls for any treatment beyond the maintenance of warmth, and the soothing of pain by the application of a mild mustard and linseed poultice, or by friction with some anodyne liniment, such as liniment of opium.

(b) **Scrofula** is a constitutional taint which manifests itself most conspicuously by a tendency to chronic enlargement of glands, proceeding from a low form of inflammatory action, and often resulting in the formation of matter. The glands specially affected by this malady are known as lymphatic glands, and are distributed all over the body, being specially numerous in the neck, the armpit, the groin, and one or two other situations. Normally they are

so small and soft as to be undetectable by sight or touch, even when situated immediately under the skin; when somewhat enlarged, they are recognisable to touch as small rounded or oval beads, somewhat separated from each other, and occurring usually in chains: as they increase further in size, they become apparent as prominent swellings, varying in size from a pea or bean to a billiard ball, smooth in outline, more or less **movable** under the skin, and painless to touch unless acutely inflamed.

Lymphatic glands never become enlarged unless some source of irritation exists on the surface of skin, or mucous membrane, or other tissue with which they are immediately connected. In the case of the lymphatic glands of the neck, the source of irritation may be found in some affection of the scalp or of the hair, in some disease of the ear, of the throat, or of the nose, or in some inflammatory disturbance connected with the teeth. In those of the armpits and groins, the initiatory irritation is usually discernible in some injury or inflammatory affection of the hands or arms, or of the feet or legs. Even in perfectly healthy children, sources of irritation such as have been mentioned will occasionally excite some enlargement, and a little tenderness of the associated glands. The striking peculiarity of scrofulous children is, that in them the lymphatic glands become enlarged with very much slighter provocation than in healthy children, and when enlarged, do not subside and become reduced when the source of irritation is removed, as happens usually when no scrofulous taint exists. Such persistently enlarged glands are known as *scrofulous glands*.

In many instances the exciting cause of the enlargement is so slight and temporary, that all trace of it may have disappeared before the enlargement of the glands becomes manifest; it should, however, always be searched for, as its early discovery and treatment may modify very much the extent and degree of the enlargement. Not unfrequently the source will be found in some slight chronic inflammation of the skin, or some irritable condition of the mucous membrane lining the nose, mouth, or throat. Among the more common of these are eczema of the scalp and behind the ear, inflammation of the external passage of the ear, with discharge, chronic inflammation of the eyelids, gum boils, enlargement of the tonsils, and adenoid growths behind the nose. These are all very frequently found originating scrofulous enlargement of the glands on either side of the neck.

Scrofulous glands, after their initial enlargement, often remain constant in size and absolutely painless for many months or years. They are, however, exceedingly liable, as the result of some fresh

irritation, or of exposure to cold, or of depressed health, or even of direct injury, to take on acute inflammatory action, and develop into abscess. When this occurs, the gland becomes increased somewhat in size, tender to touch, less movable under the skin, and more doughy in character; some amount of throbbing and sense of heat are usually experienced in it, while the skin over it becomes gradually of a dusky red colour. In a little time matter forms, and if not allowed to escape by incision of the skin over it, it breaks through, by making one or more small ragged openings for itself, and continues to ooze out through these openings for an indefinite time, fresh matter being always formed by the unhealthy remnants of the gland underneath the skin.

When the enlarged gland is not excited to further inflammation and formation of matter by any of the causes mentioned, and when the general health improves, partial absorption may occur, the gland becoming smaller and harder, and in time sometimes almost entirely disappearing.

Scrofulous children are always more delicate than others, not only in their tendency to enlargement of glands, but also in their proneness to inflammatory attacks of various kinds. They are especially liable to bronchitis, to enlargement of the tonsils, to disturbances of the digestive system, and to some affections of the skin and bones; and are very susceptible to injury from exposure to cold. The disease also tends to the development of consumption in later life.

Scrofula owes its origin largely to hereditary taint, but it is also frequently developed, and still more frequently aggravated, by residence in insanitary conditions. Dampness of soil, inefficient drainage, impure water-supply, and want of sunshine are fertile promoters of the disease; and improper diet also assists in its development. It is much more common in low-lying inland towns than among the uplands or at the sea-side.

Treatment of Scrofula.—The general treatment of scrofula resolves itself into the removal of all sources of irritation likely to excite the sensitive lymphatic glands, and the maintenance of the highest attainable standard of health. All inflammatory affections such as have been mentioned above as originating enlargement of glands, should be referred to medical care as soon as they appear, and treatment should be persevered in until complete cure results. At the same time, great care should be directed to the general health of the child; warm clothing, regular exercise, nourishing diet, and, as far as possible, an open-air life are of essential importance. Change of air occasionally is also of much value; children having their home inland should be sent preferably to the sea-coast, while those whose usual residence is near the sea

should be transferred to elevated inland resorts. Independently of change, it is undoubted that residence in bracing sea-side places, such as towns on the east coast of England and Scotland, is very beneficial for scrofulous children, a fact which should be taken into consideration when any question arises of sending children affected with this disease to schools away from home.

Treatment by medicine occupies a very inferior position to the hygienic measures described; the undoubted value of cod-liver oil in scrofula is probably quite as much due to its quality as an easily digested fatty food, as to any specific medical virtue it may possess.

The management of glands inflamed and threatening to form matter must be intrusted to a medical man. As the glands are often situated rather conspicuously, it is of much importance that the scar resulting from formation of matter should be as small and as little visible as possible; and much can be done to effect this by careful treatment, and by surgical interference at the proper moment.

(c) **Rickets** is a disease affecting the general health, and more especially the bony development, of children, which results chiefly from improper diet and unhealthy conditions of life, but is also sometimes apparently traceable to hereditary influences. Its most common cause undoubtedly is defective nutrition from insufficient or indigestible food in early life, and the disease is accordingly much more common in children artificially fed, than in those nursed by their mothers or by wet nurses. Residence in houses badly ventilated or imperfectly drained, or deprived of a due amount of sunshine, also conduces much to the development of rickets; and consequently it is encountered much more frequently in the poorer districts of over-crowded towns, than among the peasantry in country villages.

Rickets may commence at any time during the earlier years of life. Most commonly it makes its appearance during the period of the first dentition, between the ages of six months and two years.

The first symptom observed is usually a tendency to perspiration on going to sleep, affecting generally the whole of the head, face, and neck. This symptom is often so striking, that within a few minutes after the child goes to sleep the head will be seen to be covered with drops of perspiration, which continue during the whole period of sleep. Coincidentally with this there is usually some restlessness during sleep, which causes the child to throw off the bed-clothes even in cold weather, and a tendency to roll the head on the pillow in such a way as to result sometimes in

thinning of the hair on the back of the head. At the same time is often observable some enlargement of the ends of the bones of the arms and legs, the wrist joints, the ankle joints, and the knees especially appearing larger than in healthy children. Some enlargement of the head also is usually present, and a very noticeable feature is enlargement of the fontanelles on the top of the head, and arrest of their closure. In describing the fontanelles in Chapter XI. it was remarked that by the end of the first year of life they have usually diminished very much, and have disappeared altogether before two years of healthy life have expired; in rickety children, on the other hand, at the end of one year they may be found larger than at birth, and may be widely open even after two years. Associated with this arrest of closure of the fontanelles, late development of the teeth is frequently observed; children suffering from rickets may not commence teething until more than a year old, and may not complete their first dentition until after three years from birth.

Accompanying or following closely on those symptoms comes the particular feature which specially characterises the disease, the softening and distortion of the bones. The softening affects to some extent all the bones of the body; in children able to walk, those of the leg are usually the most distorted, as they suffer more than others from pressure. In such cases the legs are bent and twisted, assuming most usually a curve outwards, but sometimes being inclined forwards and inwards. The bones of the head also alter in shape, the skull becoming elongated and usually somewhat flattened on the top, while the forehead becomes square, prominent, and sometimes almost overhanging. At the same time, the face seems somewhat smaller than normal, the development of the bones entering into its formation being arrested.

The bones forming the spine become somewhat softened, and as the muscles supporting them are weakened by the disease, the child is observed to be "weak in the back," does not sit up like other children of its age, and tends to lie down, or to loll in its chair. Softening of the bones of the chest gives rise to hollowness on either side of the breast bone, which projects forward, and produces the appearance which is known when very marked as "pigeon-breast."

Rickety children are particularly susceptible to injury from exposure to cold. From the slightest chill they contract severe attacks of bronchitis, pneumonia, and intestinal catarrh, and recover from them much more slowly and with greater difficulty than healthy children. They are also very prone to disorders of the nervous system, more especially to spasmodic croup, and to convulsive fits.

• **The Diagnosis of Rickets** is usually very easy, even in its early stage, before almost any deformity of bones is present. The perspirations during sleep are very characteristic, and, in young children, the lateness of teething and the large open fontanelles furnish symptoms of much value. These, in conjunction with enlargement of the wrists and a tendency to throw off the bed-clothes at night, are quite sufficient to establish the presence of the disease. In older children the characteristic alteration in the shape of the head, together with the perspiration at night, and the enlargement of the ends of the bones, will usually suggest the existence of rickets; and the diagnosis will be confirmed when any signs of bending of the bones appear.

Treatment of Rickets.—Treatment must be directed in the first place to the alteration of the conditions from which, in any individual case, the disease may be presumed to have arisen. Due consideration must be given to the diet, and the possibility of deficiency or of excess in any of the ordinary constituents of food must be kept in view. Artificial diets of children are often much wanting in cream and other fatty substances, the cow's milk which usually enters into them not containing normally so much cream as human milk, and being often still further wanting in it from abstraction before the milk is sold. Excess of farinaceous food is also a frequent error of diet, giving rise to some degree of gastric and intestinal catarrh, with a tendency to flatulence and diarrhoea. Both these errors not unfrequently conduce to the development of rickets. Prolonged suckling on the part of the mother sometimes induces rickets in the baby nursed, as the milk in time becomes watery and wanting in nourishment, although apparently satisfying the appetite of the child.

Deficiency of animal food in older children tends to the development of rickets, especially when associated with unhealthy surroundings.

Keeping, then, these facts in view, the food given should be as nutritious as possible, and should comprise as much animal food, including fats, as is suitable to the age of the child. Children from six months to a year old may be given cream, animal broths, and eggs, in addition to milk and farinaceous food; while the diet of older ones may be supplemented with fried fat bacon, white fish, and minced meat. The sanitary condition of the home should also be • enquired into, with special reference to unhealthy arrangement of drains, and impurities in the water supply. The ventilating arrangements of the rooms occupied by children also require attention. It must be kept in view that children generally spend about half of their life in bed, and it is quite as important that they

should breathe fresh air during the night as during the day. The due admission of air to bed-rooms is not unfrequently overlooked, and sometimes indeed is intentionally prevented with the object of maintaining the temperature of the room. Such a condition predisposes strongly to the development of rickets, and calls for careful attention. In Chapter XVI. will be found some suggestions as to the best method for securing the admission of fresh air in proper quantity.

When all possible sources of injury have been considered and remedied, various hygienic measures are of value in effecting arrest and cure of the disease. Chief among these is the daily use of the cold or tepid bath, the temperature of the water being reduced as low as can be done consistently with obtaining a healthy reactionary glow, and with not alarming or irritating the child. When children dislike a cold or tepid bath, or tend to feel cold and to shiver after it, the cold douche following a warm bath is often advantageously substituted.

Warm clothing is also of much importance in the treatment of rickets. The arms and legs, as well as the whole body, should be clothed in merino or flannel both day and night, and warm external garments proper to the season should be put on when open-air exercise is taken.

The child should be taken out of doors as much as possible, and when in-doors a room exposed to sunshine should be selected for its use, when available.

One of the difficulties in the management of rickets is in preventing walking, when the child has arrived at an age at which it can use its legs. If it is allowed to walk much, the legs are almost certain to become bent, while, if not permitted to walk at all, it loses much of the open-air exercise so essential to recovery. In slight cases usually the child may be allowed to walk for a little time during the day, and taken out in a perambulator at other times; in severe cases walking must be prohibited altogether, a prohibition most easily enforced by encasing the legs in light, well-padded splints which project one or two inches below the soles of the feet. When slight bending of the legs exists, not sufficient to necessitate the constant wearing of splints, their use during the night will often restore the symmetry of the limbs, and will not be found to disturb the slumbers of the child.

Medicinal treatment is of subsidiary importance; the one really valuable drug, independently of those used to meet temporary complicating conditions, is cod-liver oil, which should be given in doses as large as the child is able to digest.

The rectification of malformation resulting from rickets belongs

to the domains of surgery, and is a department in which great advances have been made in recent years. By surgical means, in the present day, some of the most striking deformities of the legs resulting from this disease can be almost entirely rectified.

CHAPTER XX.

MANAGEMENT OF SOME EMERGENCIES.

BRUISES—SPRAINS—BURNS AND SCALDS—INCISED WOUNDS—ARREST OF BLEEDING—LACERATED WOUNDS—FOREIGN BODIES IN EYE—FOREIGN BODIES IN EAR—AND NOSE—BLEEDING FROM NOSE—EMERGENCY BASKET—CONTENTS.

Bruises.—Children in their play are apt to receive accidental injuries, which most commonly take the form of bruises. A bruise is a discoloured swelling resulting from a knock or blow. Both the swelling and discoloration arise from the rupture of some minute blood-vessels underneath the skin, and the consequent escape of blood, which diffuses itself to some distance under the skin around the site of the injury. At first as a rule of a deep purple colour, as recovery progresses the bruise usually becomes successively blue, bluish-green, green, and yellow, afterwards returning to the normal colour of the skin. Different parts of the bruise may recover with varying rapidity, so that two or three shades of colour may be present at the same time on different parts of the surface.

Uncomplicated bruises are seldom of serious importance, the only inconveniences resulting from them being the pain and stiffness by which they are usually characterised, and the unsightliness of their appearance, when on any conspicuous part of the body.

The best treatment for a bruise is the application of cold in some form as soon after the injury as possible. A handkerchief or piece of lint dipped in cold water, or in weak spirit and water, may be employed for the purpose, or when available some ice may be used, enclosed in a gutta-percha bag. The cold applications should be continued as long as any tenderness to touch is present, after which their use may be abandoned. Very little more need be done, as the bruise, after the tenderness has disappeared, will gradually diminish and fade; the process of absorption of the

effused blood may, however, be expedited somewhat by the inunction of some olive oil or some vaseline once or twice daily. The propriety of rest should be decided by the amount of pain consequent on movement.

Sprains are caused by undue stretching or twisting of joints, the ligaments of which are usually partially torn by the strain. There is generally also some stretching of other tissues in the neighbourhood of the joint, with rupture of minute vessels and effusion of blood, giving rise to the characteristic discoloration of bruising, on the skin over the joint.

There is often considerable difficulty in differentiating severe sprains from other injuries of joints, and this difficulty is often greater two or three days after the injury than immediately after; it is therefore desirable that all severe sprains should be seen by a medical man as early as possible. Until professional advice can be obtained, the joint affected should be kept at perfect rest, and in as elevated a position as possible. In sprains of the ankle and knee, the leg should be placed on a chair somewhat higher than that on which the patient sits; while in those of the wrist or elbow, the arm should rest on a table, or on a pillow if the invalid is laid in bed. Cold applications similar to those used for bruises should be employed. Complete rest is obtained most easily in the case of the leg by tying it into a pillow, the end of which is turned up against the back of a chair, or the foot of a bed. The leg is laid along the pillow, the foot being pressed against the upturned end, and one or two handkerchiefs or small lengths of bandage are tied with moderate tightness round pillow and leg together, so as to make the pillow rise on each side of the leg, and encase it as a splint. There is usually no difficulty in maintaining the arm at rest laid upon a pillow, without any bandages. Slight sprains such as are very apt to occur in the ankle joints, when they are weak or have been previously strained, are best treated by immediate immersion in water as hot as can be comfortably borne. The immersion should be continued for ten or fifteen minutes, after which the joint should be bandaged, and used with care for a few days. Even slight sprains are prone to be followed by some inflammation of the joint injured, and when complete recovery does not ensue within a few days medical advice should be sought.

Burns and Scalds are accidents not unfrequent among children. The term "burn" is usually applied to injury received by contact with actual flame, or with some solid super-heated body; while "scald" is generally employed to describe the effect produced by water or other fluid at high temperature. The injuries resulting from burns and scalds respectively are practically similar, differing

Only in this, that burns are usually more limited in area, and deeper in penetration, than scalds.

Burns and scalds occur in varying degrees of intensity. In their slightest form they appear simply as slightly reddened patches on the skin, tender to touch, and associated with sensations of heat. In a more severe form the skin is very distinctly reddened and somewhat swollen, while the surface here and there is raised in blisters, which appear as pale white areas on the red bases. Burns to this extent are very painful, the pain being of a severe burning character. A still further degree of injury causes entire destruction of the skin, which changes into a yellow or blackened sloughing mass. When the slough separates an ulcer is left, and this on healing leaves a permanent cicatricial mark on the skin. The first two forms described heal without leaving any permanent trace.

Burns and scalds are dangerous to life chiefly in proportion to the extent of their superficial area. A large slight burn is a much more serious matter than a small severe one; and the amount of pain is not any criterion of the degree of danger. In some cases of extensive burn, the collapse and shock are so great that hardly any pain is felt for a time; but both the immediate risk and the danger of later complications in such cases are very great. Burns and scalds which occupy a considerable part of the body very frequently give rise to secondary complications, more especially inflammation of the intestines, lungs, and kidneys; their progress should therefore be watched with much anxiety.

The best treatment for slight burns and scalds is the application of some bland oil, such as olive or linseed oil, soaked into lint or linen, and covered with oiled silk or gutta-percha tissue. When the burnt surface is very tender to touch even when dressed in this way, cotton wool should be placed outside the oiled silk or tissue, and the whole gently bandaged. When oil is not immediately available, vaseline spread on linen or lint may be used, and when this is not at hand, the burn should be thoroughly powdered with flour or starch, and encased in cotton wool or in flannel. The same treatment should be employed for severe burns until medical assistance can be obtained, and, when the child seems collapsed and weak, a little diluted brandy or wine should be given occasionally.

Incised Wounds.—Cuts inflicted by a sharp instrument are mainly important on account of the risk of excessive bleeding; and the first point in the treatment is the arrest of the flow of blood. This is generally most easily effected by direct pressure upon the wound with a pad of dry lint or linen, kept in position by a bandage. Usually no undue amount of pressure is required if the

pad is properly adjusted exactly over the wound. The pad should vary in size and in thickness in proportion to the length and depth of the wound. For a small cut on the finger one about half an inch square, and an eighth of an inch in thickness, will suffice; for a severe cut on the hand or arm or leg, a pad of two inches square, and of half an inch in thickness, may be necessary. The breadth of the bandage should be regulated in accordance with the part to which it is to be applied. For the fingers should not much exceed half an inch in width, and for the hand a width of one inch is sufficient; for the arm or leg a bandage two inches broad is usually most convenient, and for any other part of the body one of three or four inches in width.

The bandage should be carefully wound round the part as often as is necessary to retain the pad in its place, but should not be employed in such a way as to conceal any further bleeding that may take place. A very common error in treating wounds is to cover them with so many bandages that a great quantity of blood may be lost before it appears on the surface of the coverings. It may always be assumed that if the pad, pressed well on the cut by a few turns of a bandage, is insufficient to arrest the bleeding, no amount of bandaging external to it will be successful in doing so; one bandage alone should therefore be used to maintain the pressure of the pad on the wound.

When pressure in the manner described fails to arrest the bleeding, it is usually best to separate well the edges of the cut, and plug it thoroughly with small strips of lint or linen, putting on a bandage with moderate tightness to maintain the plug in the wound, and to exercise some pressure upon the bleeding surface. When bleeding is arrested by the pressure of a pad, the pad should be left undisturbed for at least twenty-four hours, after which, if it can be removed easily, it may be taken off, and ordinary adhesive plaster put on to protect the cut and keep its edges together while it heals. When the pad adheres closely, and there is difficulty in removing it, it is best to leave it in its place, no harm resulting if it is left in position until it becomes detached. When plugging has been necessary, the plug should be removed gently in from six to twelve hours, the sides of the cut brought together and maintained in position by adhesive plaster, and the plaster covered by a small pad and bandage. If using adhesive plaster to hold in apposition the sides of the cut, long narrow strips should be used, as they adhere much better than short broad ones.

Lacerated Wounds or Tears are generally caused by some blunt instrument such as a nail; sometimes they are the result of

Heavy falls on rough surfaces. They very seldom bleed much, and any flow of blood that may exist is generally very easily arrested. As from the manner of its production a lacerated wound is often rather dirty, the first step to be taken in treating it is to clean it thoroughly. This is best done by holding the wound over a basin, and pouring a stream of tepid water over it from a height of six to twelve inches, until the surface is perfectly clean. When clean it should be gently dried by pressing against it a soft towel, after which the raw surface should be dressed with lint soaked in carbolised oil, of the strength of one part of carbolic acid to thirty parts of olive oil. The lint should be covered with oiled silk or gutta-percha tissue, and the dressing maintained in position by a few turns of a bandage. The washing and dressing of the wound should be repeated once or twice daily.

Foreign Bodies in the Eye, such as particles of dust or grit, create much irritation, with redness and flow of tears, and should always be removed as early as possible. In the vast majority of cases where a foreign body enters the eye, it becomes adherent to the inner surface of the upper eyelid; and the irritation and pain resulting from its presence are due to its being rubbed over the sensitive surface of the eye, each time the eyelid is moved in winking. In some few cases the irritating particle lies on the inner surface of the lower eyelid; sometimes it is to be seen imbedded in the clear part of the eye itself.

When situated within the lower eyelid there is no difficulty whatever in its removal. The eyelid should be drawn down slightly with the finger, when the foreign body will be seen, and can be removed easily with the corner of a handkerchief, or with a small camel's-hair brush.

When, as is most commonly the case, the foreign body is adherent to the inner surface of the upper eyelid, the most satisfactory method of removing it is by everting the eyelid. This eversion, which is often performed as a trick by schoolboys, can usually be effected with little difficulty, if a child is patient and obedient. The eyelid is first carefully dried, and then gentle pressure is made on it with a blunt point, such as the point of a lead pencil, about one-third of an inch above the margin of the eyelid, just under the eyebrow. The pressure causes the margin of the eyelid to project a little outwards from the eye, so that it can, along with a few eyelashes, be caught within the finger and thumb; a gentle twist upwards then completes the little operation. After the foreign body has been removed the eyelid is very easily replaced by turning it downwards again. When eversion cannot be effected, the foreign body may sometimes be removed by

drawing the upper eyelid well downwards over the lower eyelashes, and allowing it to recede again two or three times successively, thus making use of the lower eyelashes as a brush to sweep the inner surface of the upper eyelid. If the foreign body is seen to be impacted in the clear surface of the eye, the child should be taken to a medical man at once, as the operation of removal is a delicate one, and much injury may result from unskilful interference.

Foreign Bodies in the Ear and Nose Children not unfrequently push small objects, such as peas, berry-stones, and small pieces of pencil, into the openings of the ear and nose, and find themselves unable afterwards to remove them. Sometimes perhaps from fear of punishment, sometimes from forgetfulness, they make no mention of what they have done, and the first indication of the presence of the foreign body may be some inflammation of the cavity in which it is situated, with perhaps a little swelling, and usually some discharge of matter. When the presence of any foreign body is manifest, its removal should be accomplished as soon as possible, but must be undertaken with some care, on account of the risk of injuring further the already irritated organs.

When a foreign body is detected in the ear, it should be removed by syringing with warm water, and should not be manipulated in any way. A strong glass or a brass syringe should be used, and while a bowl is held under the ear to receive the water returning, the current from the syringe should be directed along the roof of the passage of the ear. If the foreign body is not very tightly fixed in the ear, it will usually be pushed out by the returning current after a few minutes' syringing. When it cannot be removed in this way, medical assistance should be sought, as much danger may ensue from neglect.

A foreign body in the nose may sometimes be expelled by causing the child to sneeze, either by the use of a little snuff, or by gentle tickling of the interior of the nostril. If this is not effective, it can frequently be removed by the aid of a hairpin very slightly altered in shape. A hairpin of moderate size is compressed sufficiently to allow the curved end to enter the nostril easily. This end is then bent slightly so as to form a small hook, which should be gently inserted under the foreign body, and pushed on until it hooks behind it. If the hairpin is now slowly withdrawn, while at the same time its outer end is gradually lowered towards the mouth, the foreign body will usually come out lying in the loop. Care must be taken in inserting the hairpin that the foreign body is not pushed backwards towards the throat.

Bleeding from the Nose is not uncommon in children, but rarely occurs to such an extent as to excite anxiety. When it appears very occasionally, it may be the result of some temporary disorder of the stomach, or of some local irritation of the lining membrane of the nose due to cold; when it recurs frequently it is generally associated with some unhealthy condition of the posterior part of the nostrils, or of the throat.

To arrest the bleeding the child should be placed on a chair with its head well thrown back, and its arms held above its head, and a handkerchief dipped in cold water, or a small piece of ice, should be laid on the forehead near the base of the nose. If these means fail to stop the hæmorrhage, the nostrils may be gently syringed with cold or iced water: this, however, is a somewhat painful remedy, and is seldom required. When frequent recurrence indicates the probability of some permanent abnormal condition, the child should be placed under medical supervision.

The Mother's Emergency Basket.—In view of the possibility of occasional accidents in households, it is very convenient for mothers to have a small emergency basket containing articles likely to be useful on such occurrences. The contents of such a basket should consist of—

Some lint.	One or two surgical needles, and
Some cotton wool.	silk thread.
Some old linen.	Some oiled silk, or gutta-percha
A few prepared bandages, varying	tissue.
in width from one half inch	A pair of scissors.
to three inches.	A nurse's dressing forceps.
A roll of adhesive plaster	A bottle of carbolic olive oil of
Some safety-pins.	the strength of one part of
Ordinary needles and thread.	carbolic acid to thirty of oil.

PART IV. /

Later Married Life.

CHAPTER XXI.

THE MENOPAUSE.

CHANGE OF LIFE—AGE AT WHICH IT OCCURS—MANNER OF OCCURRENCE—DISCOMFORTS ATTENDING MENOPAUSE—AFFECTIONS OF HEAD—OF DIGESTION—MENTAL IRRITABILITY—DEPRESSION OF SPIRITS—PHYSICAL ALTERATIONS—OCCASIONAL "FLOODINGS"—TREATMENT OF VARIOUS SYMPTOMS.

The terms **menopause** and **change of life** are usually employed synonymously to indicate the period in a woman's life during which some marked constitutional alterations take place, of which the most striking feature is the cessation of the menstrual period.

Women in normal health generally menstruate regularly until they attain an age varying from forty-two to fifty years, the monthly periods only intermitting during gestation and suckling; then most commonly some irregularity in the periods manifests itself for some months or even years before complete cessation takes place. Exceptionally, the menstrual periods cease at once without any previous irregularity.

Generally the irregularity takes the form of arrest of the menstrual flow for one or two months, followed by a period somewhat more profuse than usual, and again by cessation for several months. Not unfrequently the cessation is preceded by several periods of excessive menstruation, and, after a few months of arrest, two or three successive menstrual periods may again appear of exceptional duration and amount. In other instances again the menstrual flow becomes progressively less at each period, until it ceases altogether.

Whatever the conditions may be under which the menstrual

flow ceases permanently, the cessation is as a rule preceded or accompanied by various symptoms affecting to some extent both the body and the mind. Foremost among these are usually uncomfortable sensations affecting the head; frequent headaches, occasional giddiness, and paroxysmal flushings of the face being common at this period of life. Sudden sensations of heat affecting the whole body are often complained of, and attacks of palpitation of the heart occasionally occur. Neuralgia in various situations not unfrequently presents itself. Troubles of digestion are also experienced, more especially flatulence and heart-burn. Mental irritability, depression of spirits, and hypersensitiveness often characterise this period of life, varying in their intensity from day to day, and sometimes disappearing for days, only to return in a more pronounced form. Some fulness and enlargement of the breasts, with sensations of discomfort, tenderness, and even pain are often remarked; and sometimes a feeling of distension of the whole body is experienced, with enlargement of the abdomen, partly due to flatulence and partly to deposition of fat.

The cessation of menstruation, together with enlargement and pain of the breasts and disturbance of digestion, not unfrequently induces the supposition of pregnancy; and for the first month or two after the cessation it is sometimes impossible to be certain that pregnancy does not exist. One factor in the distinction is that the morning sickness of pregnancy never presents itself in arrest of menstruation due to the access of the change of life. There is no doubt, however, that in many cases the differential diagnosis is difficult, if not impossible, without a thorough examination of the condition of the womb.

Irregular symptoms connected with the menstrual flow are so common at this period of life, that women are occasionally apt to consider all abnormal conditions presenting themselves as referable to the change of life, and thus to endanger their health by the neglect of attention to remediable maladies. One of the most common troubles thus neglected is occasional severe "flooding" from the womb. Not unfrequently this is due not to the age which the patient has attained, but to some local disorder of the womb, which may or may not be directly associated with the particular period of life reached. If allowed to recur frequently without any steps being taken for its arrest, a very much weakened state of health may be induced, which may not only temporarily render the invalid unfit for her usual duties, but may expose her to attacks of dangerous illness. It is very unwise to delay obtaining medical advice when abnormal symptoms of this character occur.

Treatment of the uncomfortable symptoms accompanying the period of menopause must be mainly directed to regulation of diet and mode of life, and promotion of secretions which will to some extent serve as substitutes for the arrested menstrual flow. The diet should be light and unstimulating, little meat food being taken, and that mainly consisting of fish or white flesh, in preference to beef or mutton. Stimulants should be used in great moderation, if at all; as a rule, total abstinence from all alcoholic fluids is best, but in some cases a little light wine at meals may be taken. Regularity of exercise in the open air is of importance, and warm clothing should always be worn, notwithstanding the tendency to sudden flushes of heat. Tepid baths once or twice daily often give much comfort.

Medicinally, much relief is often afforded by the systematic employment of some saline laxative medicine. Natural waters, such as the Hunyadi Janos or Freidrichshall, may be taken in moderate doses every morning, or on alternate mornings; or saline medicines, such as effervescing citrate of magnesia or effervescent Carlsbad salts, may be made use of, and an occasional mercurial pill is often of much service.

Healthy occupation for the mind is of much importance at this period of life; its troubles and discomforts are borne much more easily when the thoughts are distracted by external duties and pursuits, than when allowed to concentrate themselves unduly on the disagreeable sensations and other sources of disturbance incidental to the change of life. It is, after all, a period of comparatively short duration, and when borne with courage and determination emerges eventually into the mellow ripeness of elderly life, when the trials and responsibilities which have been foreshadowed in the earlier pages of this work are regarded in the golden haze of a memory which recalls the pleasures while it forgets the troubles, associated with the past.

APPENDIX.

LAW RELATING TO REGISTRATION OF BIRTHS IN THE UNITED KINGDOM.

Information of the birth of every child born alive must be given to the Registrar of the parish or district in which the birth has taken place within 42 days of its occurrence. The information should be given to the Registrar by the father or mother, or by the occupier of the house in which the birth occurred, or by any one present at the birth.

The Registrar is not entitled to charge any fee for registration ; a small fee, however, is payable to him for any copy of the certificate of registration of birth which may be desired by the informant.

If the Registrar attends at the house where the birth has taken place for the purpose of its registration, he is entitled to a fee of one shilling.

It is not necessary, although it is desirable, to name the child before registration ; the name may be added to the register at any time within 12 months on payment of a fee of one shilling to the Registrar.

It is not necessary to register the birth of a still-born child.

LAW RELATING TO VACCINATION OF CHILDREN.

Every child born in the United Kingdom must be vaccinated within six months of its birth, unless a medical certificate is obtained from a duly qualified medical man to the effect that it is suffering from some malady or weakness which renders vaccination undesirable or improper ; or unless within four months of the birth a certificate of exemption is obtained from a magistrate, who must be satisfied that the parent conscientiously believes that vaccination would be prejudicial to the health of the child. Medical certificates of unfitness for vaccination cannot postpone the vaccination for a period of more than two months from the date of signature ; but renewed certificates may be given every successive two months until the child is fit to be vaccinated.

LAW RELATING TO NOTIFICATION OF INFECTIOUS DISEASES.

In London, and in such sanitary districts throughout the United Kingdom as have adopted the " Infectious Diseases (Notification) Act, 1889," when any inmate of a house is attacked with any of the infectious diseases mentioned in the Act (and enumerated below), it is the duty of the head of the family, or the nearest relative residing with the patient, to give information of the fact as soon as he becomes aware of it, to the medical officer of health of the district.

The diseases which must be notified are small-pox, cholera, diphtheria, membranous croup, erysipelas, scarlet fever or scarlatina, typhus fever, typhoid or enteric fever, relapsing fever, continued fever, and puerperal fever.

The information should be given in a letter addressed to the medical officer of health of the ——— sanitary district. In London the sanitary districts correspond to the parishes, and the medical officer of health usually has an office in the Parish Vestry Hall.

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